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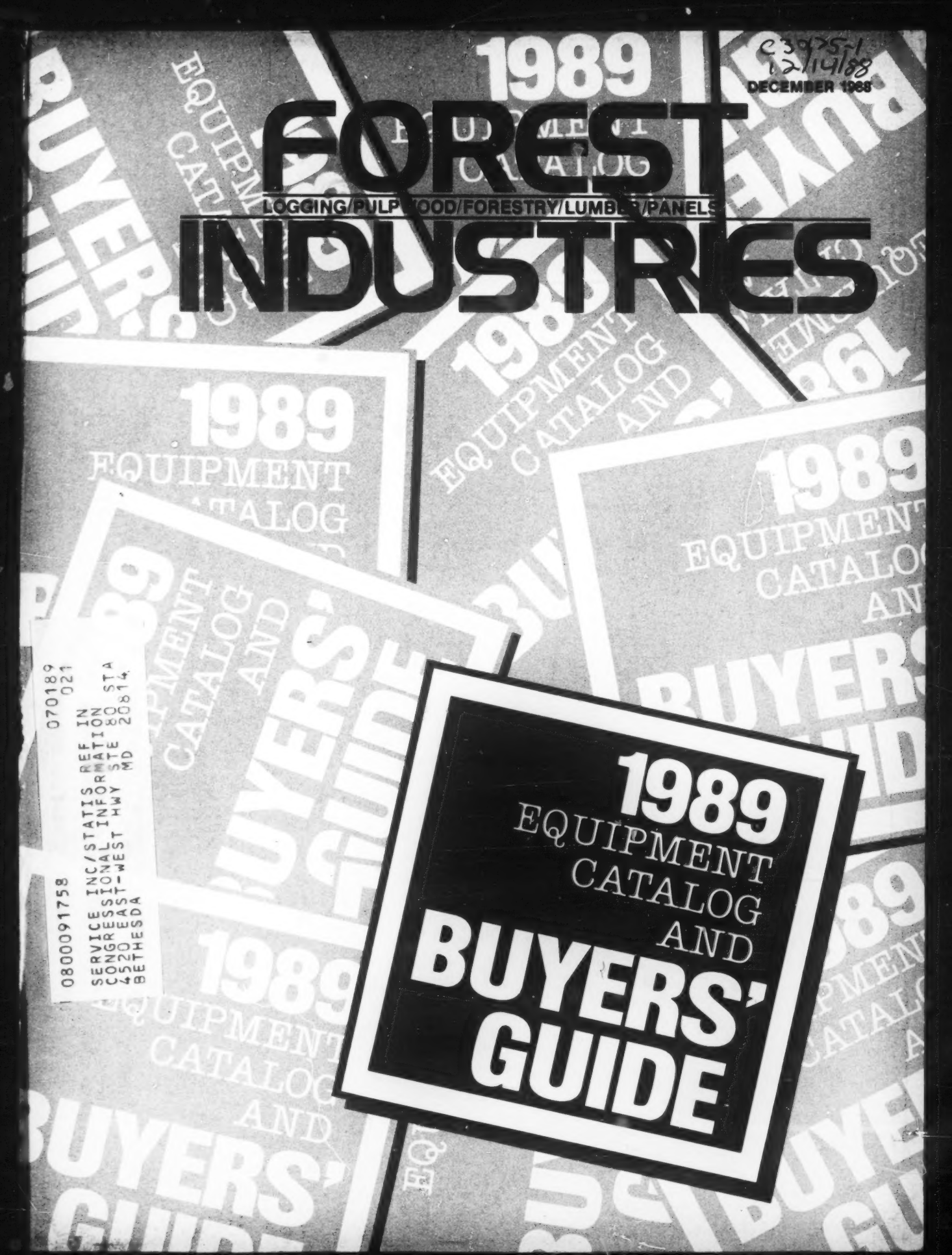
LOGGING/PULPWOOD/FORESTRY/LUMBER/PANELS



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While paper earnings soar, solid wood declines

SAN FRANCISCO, CALIF.—Integrated forest products corporations continued to draw strength from booming pulp and paper markets in the third quarter of 1988. However, financial reports indicated solid-wood revenues were soft —falling sharply in some cases from year-ago levels—due mainly to depressed prices caused by a slow rate of new home construction. Some companies also experienced production losses due to strikes this summer and fall.

But the firms involved heavily in the paper segment did well, and 1988 is foreseen as a record year for the pulp and paper industry.

"Although our pulp segment continues to produce record results, we're experiencing a softening of demand and price levels for building products," remarked Harry A. Merlo, chairman and president of Louisiana-Pacific Corp.

"Lumber prices were about 10% lower in this year's third quarter than in the third quarter of 1987," Merlo said. "Plywood prices were off about 8.5%. Prices of OSB panels were 14% lower."

Operating profit of the building products group was $44.5 million for the quarter, a 33.3% drop from the comparable period a year ago; for nine months $133.5 million, an 18.3% slide.

Temple-Inland Inc.'s two paper groups reported record earnings for the quarter, while "our building products group had sharply lower earnings," noted president and CEO Clifford J. Grum. Building products manufacturing earnings were $4 million for the quarter, a drop of 59.2% from third-quarter 1987; the nine-month figure of $20.2 million represented a 33.1% decline.

A similar refrain came from Georgia-Pacific Corp., where chairman and CEO T. Marshall Hahn indicated that "overall performance for the third quarter was sound" based on healthy demand for pulp, linerboard and uncoated freesheet paper.

"Operating profits in our building products business were down—$120 million in the 1988 third quarter versus an all-time high of $156 million in 1987. Sales volume was good during the quarter, but weak pricing for plywood and lumber products adversely affected our profit levels," Hahn stated.

Boise Cascade Corp. chairman and CEO John B. Fery observed that a nine-week strike affecting 15 of the company's 28 U.S. wood products facilities reduced third-quarter operating rates for the company's plywood and lumber mills by 20% and 30%, respectively, compared with the same period a year ago. Building products operating income for the quarter was $3.216 million,

U.S., Canadian forest industry results, third quarter 1988 ($ millions)

Company	Sales	% change 1988/87	Earnings[1]	% change 1988/87
Abitibi-Price	C813.4	8.5	C44.5	34.8
Boise Cascade Corp.	1,000.0	0.3	71.9	42.7
Canadian Pacific For. Prods.	C766.0	10.5	C92.6	61.9
Canfor Corp.	C268.9	(15.7)	C31.9[2]	2.6
Champion International	1,285.7	7.2	122.4	38.0
Chesapeake Corp.	188.4	5.0	14.3	293.2
Consolidated-Bathurst	C595.5	6.8	C61.6[3]	35.1
Crestbrook Forest Ind. Ltd.	C67.3	9.5	C9.5	54.0
Domtar Inc.	C684.0	5.1	C27.0	(22.9)
Federal Paper Board	254.6	7.1	34.7	64.3
Fletcher Challenge Canada[4]	C351.1	(1.4)	C40.1	16.6
Georgia-Pacific Corp.	2,400.0	(0.8)	144.0	(3.4)
Great Northern Nekoosa	937.7	41.1	92.3	65.7
International Paper Co.	2,400.0	20.0	201.0	97.1
International For. Prods.	C109.8	4.5	(C0.3)	(102.6)
Louisiana-Pacific Corp.	462.9	0.4	36.7[5]	(11.4)
MacMillan Bloedel Ltd.	C824.4	0.9	C70.5	(14.8)
Noranda Forest Inc.	C1,143.0	2.7	C66.0	13.8
Normick Perron Inc.	C54.4	34.3	C2.6	73.3
Pope & Talbot Inc.	123.3	8.6	8.5	19.8
Potlatch Corp.	273.7	10.9	28.3	25.2
Primex Forest Ind. Ltd.	C19.3	22.1	(C0.2)	(120.6)
Slocan Forest Products	C43.3	0.7	C2.7	(20.6)
Stone Container Corp.	1,022.0	12.7	89.1	100.2
Temple-Inland Inc.	454.6	8.5	53.0	38.7
Union Camp Corp.	669.8	11.5	75.0	32.7
Weldwood of Canada Ltd.	C232.6	15.3	C17.8	21.9
Westvaco Corp. (7/31)	532.2	10.5	51.8	20.0
Weyerhaeuser Co.	1,959.9	7.7	144.8	14.8
Willamette Industries	441.0	17.0	39.0	21.9

1. Income after taxes from continuing operations, excluding most significant non-recurring items in both years. 2. Includes extraordinary item of C$9.4 million resulting from reorganization of Canfor USA Corp. 3. Year-ago earnings of C$45.5 million do not include an extraordinary gain of C$28.8 million. 4. Results do not include Crown Forest Industries. 5. 1987 earnings restated to reflect discontinued operations.

down 87.7% from third-quarter 1987.

Continued strength in pulp, paper and linerboard markets was credited by Willamette Industries president and CEO William Swindells with record sales and earnings through the first nine months. "While particleboard and medium-density fiberboard prices held steady during the quarter, lumber and plywood prices fluctuated dramatically because of the West Coast woodworkers' strike," he observed.

With record earnings for the third quarter and nine months, Pope & Talbot Inc. followed the same pattern.

Weyerhaeuser Co. also reported softness in prices for lumber and structural panels, and cited logging curtailments due to fire danger as a factor causing earnings growth in the third quarter to slow from the first-half rate. ■

HOLDINGS UNITED

Noranda creates new wood panel subsidiary

TORONTO, ONT.—Noranda Forest Inc. has consolidated North American and European wood-based panel operations of various holdings into a new, wholly owned subsidiary called Noranda Panelboard Inc.

Elements consist of Northwood Panelboard Co., Solway, Minn. (OSB); Atlantic Waferboard Inc., Chatham, N.B.; the particleboard division of James Maclaren Industries Inc., Lac des Iles, Que.; and Highland Forest Products plc, Morayhill, Scotland (OSB).

Noranda purchased Highland Forest Products, Europe's first OSB mill, earlier this year for $21 million. ■

LABOR PACTS INKED

Pope & Talbot settles; some loose ends remain

PORTLAND, ORE.—Echoes of summer and fall strikes at western lumber and plywood mills are beginning to subside. Settlements and negotiations continue as some employees work without contracts and others are off the job. Recent developments:

Pope & Talbot Inc. employees at Port Gamble, Wash., and Oakridge, Ore., ratified a settlement with the Western Council of Industrial Workers on the second vote. The agreement parallels the earlier settlement with Willamette Industries Inc., essentially a four-year contract containing a ratification bonus of $1400, a 3% wage increase in 1989 and 4% thereafter. The P&T contract also spells out a probable-cause drug testing policy.

Coos Head Lumber Co., Coos Bay, Ore., and the International Woodworkers of America-U.S. settled on a two-year contract retroactive to June 1. Terms include an immediate 5½% wage increase and 2% next June 1.

Further meetings scheduled: John Day Lumber Co., John Day, Ore.; Roseburg Lumber Co., Roseburg, Ore.

New strike: Snow Mountain Pine Co. and Tecton Laminates, Hines, Ore.; some 450 WCIW members went on strike Oct. 21.

Old strike: Summit Timber Co., Darrington, Wash., operating with replacement workers; no meetings scheduled. ■

HIGH PRICES FELT

Housing starts steady, interest rates decline

WASHINGTON, D.C.—New home construction in September continued almost level on a seasonally adjusted annual rate basis, rising 1.5% to 1.453 million from a revised August rate of 1.431 million units.

The annual rate of starts for the third quarter was 1.45 million, versus 1.48 million in the first and second quarters of 1988. Most industry sources have zeroed in on 1.45 million units as the year's expected total.

The drop in starts from 1.62 million last year conceals sustained strength in the single-family sector, where starts are expected to top one million for the sixth year in a row. Single-family homes historically consume more wood per unit than multiples.

Actual starts for the first nine months of the year totaled 1,142,700 units, a drop of 10.5% from 1987. Single-family units fell 7.8%, multi-family units plummeted 17.3%.

The housing market's historic sensitivity to mortgage interest rates has been blamed for the decline in starts this year and for predicted additional softness in 1989. However, in the final months of 1988, some observers identified another culprit: high prices, which are excluding a growing percentage of the population from the market.

Many lending institutions were offering 30-year fixed-rate mortgages below 10% in the last week of October, although the nationwide average was pegged at 10.22% by the Federal Home Loan Mortgage Corp.

Fixed-rate mortgages dipped briefly below 10% last March, then rose in succeeding months to a peak of nearly 11% in August, when rates started going down again. Adjustable-rate mortgages average 8.1%. ■

NEW PANEL RECIPE

Gypsum composites: North American debut

SAN FRANCISCO, CALIF.—A product new to North America has hit the news suddenly with announcements that two gypsum fiberboard plants will be constructed on the East Coast, one in Canada and one in the United States.

Louisiana-Pacific Panel Products Ltd., a wholly owned subsidiary of Louisiana-Pacific Corp., will build a gypsum fiberboard plant on Cape Breton Island in Nova Scotia. Construction is to begin in 1989, with completion in 1990. The plant will employ about 100 people and produce 240 million ft^2/yr (½-in. basis). Maximum panel size will be 8 by 24 ft. Separately, it has been announced that a new company, Highland America, will build a gypsum fiberboard plant at East Providence, R.I., to be completed in November 1989.

Details of the L-P process were not released. The Highland plant will use a Würtex forming system and a Küsters continuous press measuring approxi-

(continued on p. 13)

Lodgepole pine nears 'major species' status

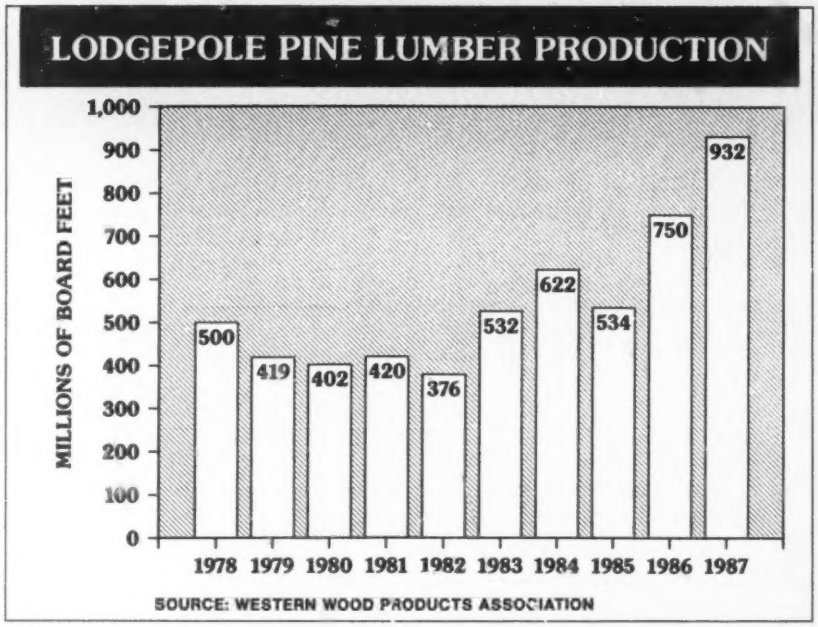
PORTLAND, ORE.—Old-timers often call it jackpine. Doghair, if it's dense and untended. But statistics show lodgepole pine is a western species gaining new respect.

Lodgepole pine lumber production in 1987 reached an all-time high of 932 million bd ft, reported the Western Wood Products Assn. This is close to the 1 billion bd ft mark that would qualify it for the unofficial "major species" category.

A decade ago, the production level was 500 million bd ft. It dipped as low as 376 million in 1982 (when everything dipped) and has been on a zigzag upward course since then.

WWPA officials credited high overall lumber consumption and a surge of salvage activity following severe mountain pine beetle infestation. Modern small-log processing techniques (lodgepole typically measures 6 to 10 in. dbh) must also share the credit.

Lodgepole pine is typically sawn into dimension and boards, and shipped mixed with other species of similar strength characteristics: Engelmann spruce, ponderosa pine and alpine fir. It is also included in Canada's spruce-pine-fir grouping. ■



International program established at FPL

MADISON, WIS.—A new program on international forest products was established recently at the U.S. Forest Service's Forest Products Laboratory (FPL).

The International Forest Products Research, Development and Application (RD&A) Program will link U.S. researchers and industry with forest products technologies and research being developed abroad and will assist the research efforts of developing nations.

"This unit will foster greater cooperation between the U.S. and other countries in ways that will benefit both," according to FPL director John Erickson.

Gary Lindell, former FPL assistant director for processing and protection research, has been named program manager. He will be assisted by Bob Maeglin, research forest products technologist, who will coordinate the tropical forestry aspects of the program.

"Until now, FPL has been primarily reactive to international interests," Lindell noted. "The International Forest Products program will allow a proactively managed program for addressing this growing area."

Connecting people with information, technology or funding with others in need of those resources will be a key result of the program, Lindell said. "We see ourselves as a catalyst to make research and information exchange possible."

He outlined three major functions for the new program. The first will be to seek out technologies being developed elsewhere that will be useful to U.S. industries. Many countries, such as France, Japan, Great Britain and Finland, have their own strong forest products research program, producing technologies that could affect the world market for forest products. Where appropriate, joint research projects with such countries may be developed.

Second, he sees the program continuing FPL's traditional support for forest products research in developing nations.

A third function of the program will be to bring foreign cooperator scientists to the Forest Products Lab for joint research and training.

Erickson emphasized the new program will supplement and support existing Forest Service international forestry efforts. This unit will be a key technical advisor on forest products for the agency's International Forestry staff in Washington, D.C. They also will be looking for opportunities to involve other Forest Service research stations, State & Private Forestry, and universities in cooperative ventures. ■

COFI project promotes wood use in China

VANCOUVER, B.C.—British Columbia lumbermen are going to China to show that timber-poor country how to use wood for building. The demonstration is a joint industry-federal government project being organized by the Council of Forest Industries in B.C. (COFI).

The demonstration teams will build a farmhouse and two different types of industrial buildings in Beijing.

The farmhouse is of particular interest to the Chinese, who usually rely on brick and concrete for construction, primarily because they have so little wood.

In the industrial buildings wood will be used to demonstrate its use as trusses in pitched roofs.

This latest demonstration project follows a similar exercise in Shanghai in 1987. COFI president Mike Apsey says the Shanghai pilot project was viewed by thousands of Chinese visitors and was judged a great success.

The new buildings are scheduled to be finished by mid-1989. ■

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Combining *The Timberman* and *The Lumberman*

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Multi-function harvesters simplify salvage operation

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Back-to-back export bonanzas: 1988-89

NOW I KNOW what it feels like to be an economist who is conservative.

Last year at this time I wrote an editorial (March 1988, p. 15) entitled "Look for an export bonanza in 1988" and predicted an upsurge in exports of 32% to over $5 billion. At the same time, most industry sages were conservatively predicting 12 to 16% growth.

The actual result (our projection, based on 11 months) is an increase of 35% in wood products exports, totaling $5.4 billion. An export bonanza in the truest sense. Yes, I was actually *conservative* (not typical for me!).

So what about 1989? I predict increased growth—another bonanza—though not with as big a surge as last year. My forecast is for U.S. exports of $6.1 billion in '89, up 14% from 1988. The result is impressive when you consider that the previous high was $4 billion.

The rationale is the same as last year, except I don't think the percentage impact will be quite as great.

- Money: The U.S. dollar will be weak.
- Motivation: U.S. housing starts will be down. Thus more companies will again look outside the United States.
- Markets: Most will stay strong. Highlights by country follow.

JAPAN: Look for continued growth in 1989. Though housing may dip from 1.6 to 1.4 million starts, the government emphasis still will be to stimulate domestic demand.

Though logs will ease their frenetic expansion, value-added products will continue to gain. Softwood lumber will increase and Japan will become America's largest hardwood lumber market. Hardwood veneer demand will double. And U.S. hardwood chips will become a big business.

Japan as a market alone will approach *total* U.S. exports for the years 1981 to 1985.

CANADA: Year in and year out, Canada provides a steadily growing market for U.S. wood products, especially those of higher value. I expect this trend will become even more prominent over the next several years due to the Free Trade Agreement, which gradually will eliminate tariffs on many higher valued products such as molding and millwork.

CHINA: The PRC experienced a great resurgence as a U.S. customer in 1988 as U.S. log exports (97%) jumped 200% to over $500 million, a record year. Although Chinese business varies considerably—dependent upon that country's own currency restrictions—I still believe it has the potential of becoming a billion dollar customer for the U.S. in the mid-1990s. My projection is for another 30% growth year in 1989, making it America's number two export customer.

KOREA AND TAIWAN: The ROK continues to grow apace. Softwood logs continue to be the mainstay (76%) of the business. However, hardwood lumber and veneer shipments of nearly $10 million each reflected 40% and 100% growth rates in the last year, due largely to a surging Korean furniture industry. I continue to believe Korea, with its forecast over $400 million in exports for 1989, is an outstanding opportunity for U.S. companies and warrants increased attention.

As for Taiwan, it is not just a market for U.S. hardwood products. (As a matter of fact, its furniture industry is on a plateau and U.S. exports of hardwood lumber, for example, dipped in 1988.) In 1988 Taiwan started buying U.S. softwood logs and lumber as well as particleboard and hardboard in a much bigger way. Moreover, it became America's number two (after Japan) chip buyer. I expect these trends to continue in 1989 and for Taiwan to go up another 20% or more.

EUROPE: The big buyers here are the United Kingdom (number 6), Germany (7), Italy (9) and, with a big jump in 1988, Spain (11).

The U.K. always has been a good market for U.S. exports, but it was outstanding in 1988, reaching over $200 million with 40% growth. U.S. industry market development efforts, helped by a weak dollar and strong demand, pushed U.S. exports of softwood by 59% and hardwood lumber by 70% (Britain is America's third largest customer for the latter). I expect another good year in 1989.

In Italy and Germany, continued growth is forecast in all sectors for U.S. value-added products.

The European surprise for 1988 was Spain, sparked by big demand increases in both softwoods and hardwoods. As the growth of that economy continues, Spain's markets will improve.

OTHER MARKETS: Mexico (8) and Australia (10) were the other two countries making the top tier.

Mexico continues to expand sharply as a market for U.S. softwood and hardwood lumber. Other products showing strong growth include wood chips and particleboard. As our southern neighbor continues in 1989 to stabilize financially, calm itself politically, and liberalize its markets, we can expect more expansion.

Australia is basically a softwood lumber market, and it increased dramatically in 1988. I expect further growth in 1989, but not the same magnitude.

Summing up, 1988 was phenomenal. And 1989 will be better. Good exporting! —*John V. Ward*

U.S. wood exports forecast, 1988-89 (thousands of dollars)

Top markets	Total 1988	% chg from '87	Total 1989	% chg from '88
Japan	2247	24	2384	6
Canada	547	16	580	6
China	505	200	666	32
Korea	322	70	411	28
Taiwan	197	50	242	23
U.K.	202	40	235	16
Germany	183	16	213	16
Mexico	175	60	228	30
Italy	158	15	178	13
Australia	114	72	127	11
Spain	105	58	139	32
Other	592	17	677	14
Total	**5347**	**35**	**6080**	**14**

THE AUTHOR is president of John V. Ward Associates Inc., an international trade consulting firm specializing in market development, market research and market access problems.

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Lumber Processing Update

1989 Volume 116 Number 3

MARCH

Lumber Processing Update

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IN WIDMAN FORECAST

After two-year slump, market strength seen

VANCOUVER, B.C.—The forest industry in the United States and Canada will have to weather a period of reduced demand this year and next, but a new upward economic cycle should get underway in 1991. This is the projection contained in *Markets '89-93: The Outlook for North American Forest Products*, just off press.

The detailed forecast is published annually by Widman Management Ltd., this year in cooperation with FOREST INDUSTRIES, which is marketing and distributing the 222-page volume on a worldwide basis.

North American lumber consumption should decline by about 5% in 1989 and a further 7% in 1990, according to the forecast. Wood-based panel production and prices will be depressed this year and next, but will recover as the housing market strengthens in 1991-93.

Lumber exports to offshore markets, Asia in particular, should remain at good levels.

Information concerning the report is available from Widman Management Ltd. at (604) 669-5635 or FOREST INDUSTRIES at (415) 995-2408. ■

U.S. forest industry results, fourth quarter, full year 1988 ($ millions)

Company	Fourth quarter				Full year 1988			
	Sales	% chg	Ernge[1]	% chg	Sales	% chg	Ernge[1]	% chg
Boise Cascade	1,024.8	6.1	76.5	33.6	4,094.6	7.2	289.1	58.0
Champion Int'l	1,314.4	13.6	119.9	46.0	5,100.0	16.7	456.0	19.4
Chesapeake Corp.	176.9	6.7	15.4	1.4	711.3	5.3	51.5	70.7
Federal Paper Bd[2]	368.7	16.2	57.9	130.3	1,116.9	8.9	143.3	93.7
Georgia-Pacific[3]	2.567.0	15.2	129.0	15.2	9,509.0	10.5	467.9	2.0
Gt Nor Nekoosa	950.0	21.4	86.0	51.7	3,588.1	38.6	341.7	70.3
Int'l Paper	2,500.0	25.0	206.0	64.8	9,500.0	21.8	754.0	85.3
Louisiana-Pacific[4]	448.3	7.7	31.1	3.3	1,799.4	8.8	135.2	13.8
Pope & Talbot	142.0	33.0	8.6	20.3	515.0	20.9	31.9	13.6
Potlatch	285.4	12.9	33.0	32.5	1,084.0	9.3	112.4	28.3
Temple-Inland	421.0	5.8	43.3	28.5	1,750.0	9.4	195.0	37.9
Union Camp[5]	685.6	9.4	78.5	33.1	2,660.9	12.7	295.1	42.3
Westvaco (11/31)	567.0	9.0	65.6	11.0	2,133.9	12.1	200.4	37.1
Weyerhaeuser[6]	2,560.0	8.9	154.9	19.7	10,000.0	13.3	564.4	26.4
Willamette Ind	445.7	17.4	39.4	2.0	1,716.0	19.9	161.1	32.8

1. Income after taxes, from continuing operations, excluding most significant nonrecurring items in both years. 2. Fourth-quarter and year earnings include one-time pretax gain of $7.2 million from prior-year tax settlement and net effect of facilities restructuring program. 3. Net earnings include petax gain of $66 million from liquidation of investments. 4. Restated from both years to reflect spinoff of Fibreboard Corp. in June 1988. 5. 1987 results restated to reflect consolidation of real estate subsidiaries. 6. Fourth-quarter and year results reflect consolidation costs.

PINES TO NEWCASTLE

P&T expands capacity in Black Hills region

PORTLAND, ORE.—Pope & Talbot Inc. has acquired a ponderosa pine sawmill in Newcastle, Wyo., with purchase of Cambria Forest Products Inc.

The mill employs 60 people and produces about 25 million bd ft annually of ponderosa pine lumber in framing and finishing dimensions. In the northeastern corner of the state, it is situated about 70 mi from P&T's sawmill in Spearfish, S.D.

Laminating facility purchased

Columbia Forest Products Inc., headquartered in Portland, Ore., has purchased a panel laminating and remanufacturing plant in Thomasville, N.C., from Weyerhaeuser Co.

In addition to laminating stock panel sizes, the Thomasville plant has the capability to remanufacture panels into furniture and cabinet components. ■

EARNINGS UP

Solid-wood weakness offset by pulp, paper

SAN FRANCISCO, CALIF.—Carried by strength in pulp and paper markets, integrated forest products corporations posted significant earnings increases in the fourth quarter of 1988 and in the full year, compared with 1987.

High pulp and paper industry profits reflected strong demand that resulted in full capacity operation and price increases in most grade segments during 1988, observed the newsletter *Pulp & Paper Week*.

Where separate solid-wood figures were reported, the picture was less rosy.

Operating income for Boise Cascade Corp.'s building products segment in 1988, at $54.2 million, was 56% that of the 1987 figure.

Earnings for Potlatch Corp.'s wood products group collapsed to $3.2 million in 1988 from $31 million in 1987, due in part to prolonged startup of the company's new Lewiston, Idaho, sawmill.

Louisiana-Pacific Corp. reported operating profit of $166.9 million from building products, 22% below 1987.

Georgia-Pacific Corp. building products earnings in 1988 were $428 million, down 20%. Chairman and CEO T. Marshall Hahn Jr. described 1988 as "a good year for the building products segment." and foresees "strong home improvement and industrial markets and growing export opportunities." ■

TO EACH A TASK

Fletcher consolidates two Canadian plymills

NEW WESTMINSTER, B.C.—Fletcher Challenge Canada Ltd. has taken its first major step toward rationalizing operations acquired through the merger of British Columbia Forest Products Ltd. and Crown Forest Industries Ltd. last September.

By April 30, the former BCFP Delta Plywood Division plant and the ex-Crown Fraser Mills plywood plant will be consolidated. The Delta mill will produce plywood while Fraser Mills will focus on value-added veneer and overlay products.

The combined work force of 410 will be reduced by 115.

Chip mill to be built

Plans to build a chip mill adjacent to the Jasper Sawmill at Jasper, Ala., have been announced by Southeast Wood-Jasper Sawmill Inc. The mill will produce 300,000 tons per year on a one-shift basis. ■

A 'major economic disaster' is developing in forest-dependent communities as mills are forced to close or curtail production due to log shortages

Crisis looming in western timber supply

By Michael D. Sullivan

THE TIMBER SUPPLY PROBLEM which has been building in the western U.S. over the past decade has reached crisis proportions. It now seems certain that nothing short of congressional action will resolve the issues.

The current crisis stems from two concurrent events. First, the environmental movement is escalating its administrative and legal initiatives to block public timber sales. Appeals and litigation of federal timber sales are tightening supply in many parts of the West, driving up the price of raw material and causing mill closures and production curtailments in many areas.

Second, federal agencies, especially the U.S. Forest Service, are adding to uncertainty over future timber supplies with the preparation of their new 10-year land-use plans for the national forests. Reductions are proposed in almost every region (Fig. 1).

The real and prospective reductions in timber availability are starting to take their toll on an industry which should be enjoying reasonable prosperity. Domestic wood demand remains high, and producers are beginning to see the fruits of their efforts to modernize and diversify markets.

Yet mills continue to close and curtail production for lack of raw material. In western Oregon, timber supply has dropped to a point where 17 mills have been forced to close in recent weeks.

A recent survey of 100 western companies by National Forest Products Assn. found half reporting difficulty in getting logs to keep mills operating. Appeals or lawsuits were the reason.

A "major economic disaster" is shaping up in forest-dependent communities, says NFPA. More than 900 employees have already been laid off in the three West Coast states; 45% of the firms expect closures and curtailments in 1989 due to log shortages. If survey trends continue, more than 16,000 employees will be out of work in three West Coast states by the end of 1989.

The Forest Service acknowledges that almost two billion bd ft of national forest timber in Oregon, Washington and California has been appealed or litigated during the past three years. This includes 52 sales, containing 426 million bd ft, that are being held off the market.

In Region Six, federal timber under contract has fallen to record low levels. In western Oregon, where an injunction on BLM timber sales has reduced timber sales significantly, timber under contract has dropped 19% in the last 15 months. Some mills are operating with two weeks of log inventory.

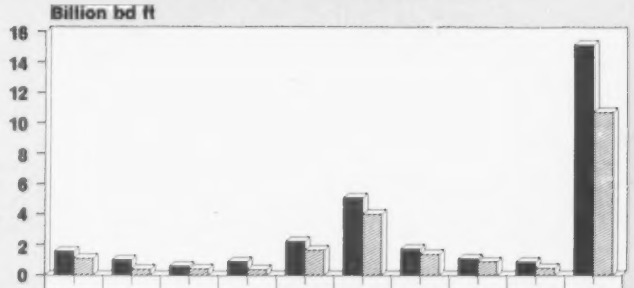
There is no question that this is the result of a sophisticated, well-organized campaign extending from rural communities to Congress. It reflects a careful strategy in which national environmental groups—the Wilderness Society, Audubon Society and Sierra Club—and local affiliates are employing local administrative and legal initiatives to build sweeping legal precedents.

Appeals and litigation to stop impiementation of the new land-use plans for the national forests can be expected to accelerate as new plans are finalized in Region Six, where major controversies are erupting over the preservation of so-called "ancient forests."

Region Six seems to be the battleground chosen by the major national environmental groups. They have set the goal of locking up two million acres in the region within the next five years.

The largest timber producer in the national forest system, Region Six has been the focus of attempts by local, regional and national environmental groups, often working together simultaneously on several fronts, to file multiple appeals in attempts to obstruct timber sales. The appeals generally claim the USFS has not followed the procedures specified by the National Environmental Policy Act of 1969 and the National Forest Management Act of 1976. These

Fig. 1—National Forest Regions: current potential yield vs. NFMA plans



	I	II	III	IV	V	VI	VIII	IX	X	All
Current potential yield	1.57	1.03	0.62	0.91	2.23	5.08	1.73	1.1	0.88	15.15
Proposed plan	1.12	0.42	0.44	0.39	1.66	4.02	1.39	0.9	0.47	10.74

National Forest Regions

Current potential yield Proposed plan

Data from U.S. Forest Service

TABLE 1—Timber industry poll on mill closures and curtailments due to appeals and litigation of federal timber sales

	Oregon	Washington	California	Total/Avg.
No. companies experiencing supply, operational, or production curtailments	19	23	6	48
No. of employees laid off	300	464	145	909
More layoffs expected (1989)	492	1730	0	2,222
Layoffs expected (beyond 1989)	5,170	2,807	5,803	13,780
Total employees now	18,432	7,362	13,523	39,317
Have contingent supply (%)	57	46	55	52.0
Amount of volume left (months)	12	7	14	11
Plan to withhold new investments (no. companies)	20	25	10	55
Amount of investment $ being withheld ($ millions)	47.75	16.9	82.0	146.65
No. of companies in survey	46	40	20	106

SOURCE: NFPA

appeals often lack merit and are later dismissed, but delay timber sales and prevent development of lands scheduled for timber management.

Last year, the Oregon Natural Resources Council and its local affiliates filed nearly 300 appeals on national forest timber sales in Region Six. Many were filed on pre-prepared forms with only the name of the timber sale left blank. Some of the appeals were on sales which were either in progress or had been completed and closed. Ultimately, all but a handful were dismissed.

While Region Six has generated more heated and precedent-setting legal action than any national forest region, all regions in the national forest system have been affected by the campaign.

On the West Coast, wildlife issues are often the focus. The infamous northern spotted owl is the basis for much of the action. The Ninth Circuit Court of Appeals recently lifted an injunction which last May stopped the sale of nearly half a billion bd ft of timber on Bureau of Land Management land in western Oregon. The injunction resulted from an appeals court ruling on a suit brought by the Audubon Society and others challenging environmental procedures for protecting the owl's habitat.

Issues in the Intermountain states include below-cost timber sales. Like their counterparts to the West, preservationists in Idaho, Montana and Wyoming have as their fundamental goal the elimination of timber management and harvest on undeveloped public lands.

Hopes that completed forest plans might reduce the conflict and legal barrage have evaporated, and even officials in the Forest Service now acknowledge that the plans will resolve few, if any, of the issues. A potentially precedent-setting suit has now been filed on the final plan for the Idaho Panhandle National Forest. The suit seeks an injunction against all proposed timber sales in roadless lands. In essence, the plaintiffs are challenging the implementation of the plan, arguing that it lacks sufficient site-specific information. A victory on such grounds would raise the frightening prospect of individual, multi-volume environmental impact statements for each timber sale.

In the past decade, the Forest Service and BLM have been called upon to defend their actions in court many times in the West. Interestingly enough, the courts have issued no decision which has challenged agency judgment on substantive environmental issues. In nearly every instance, environmental litigants have won on procedural issues only.

More often than not, however, that's been sufficient to delay or deter management activities.

For the most part, court officials find the situation as unsavory as the agencies and the industry.

Congress has been called upon increasingly to release agencies from management issues tied up in the courts. Congress has included special language in the Interior Appropriations bill for the past four years to maintain the timber sale program on the Mapleton Ranger District of the Siuslaw National Forest in western Oregon. The sale program there has been enjoined as the result of the 1984 suit by the National Wildlife Federation until the new forest plan is completed.

In addition, Congress has included special report language in the past two Interior Appropriations bills designed to limit judicial review of agency actions on certain grounds.

Last year, in the wake of disastrous forest fires in southern Oregon and northern California, Congress used the Interior Appropriations bill to prevent lengthy litigation over salvage and rehabilitation of the burned-over lands. But piecemeal resolution of environmental issues is wearing thin, and members of the western congressional delegation say they are exasperated by the misuse of the administrative appeals process. While the Forest Service recently modified the process to streamline and expedite handling of appeals, it seems impossible to eliminate abuse of the system without rendering it impotent.

No modification of the administrative appeals process will take the courts out of the picture, however, and the national forest plans that are already completed or nearing completion are fertile territory for environmental litigation.

It is becoming increasingly apparent that Congressional action will be necessary if long and costly litigation over the forest plans is to be avoided. Unfortunately, only a handful of western senators and congressmen understand the issues and the magnitude of the problem.

Marshalled in the other camp are the giants of the environmental movement, armed with multi-million-dollar budgets and legions of legal and political experts. Their constituencies are well-organized and motivated by slickly prepared and effectively distributed propaganda. They can easily be mobilized to leverage the congressmen from rural Maine to urban Los Angeles.

The battle that is about to be joined in the Congress will set the course for management of America's public lands for the next decade and perhaps the next century. Much is at stake, including the fate of many companies in the industry that rely primarily or exclusively on public lands for their raw material. The fate of their employees and the communities in which they operate also will hang in the balance.

Industry must move now to inform its natural constituents and allies of the impending confrontation. Far too few of its employees understand what is at stake, and little effort has been made to make suppliers aware of their stake in the outcome. Most important, wood consumers across the country must also be advised of their interests.

In an industry as fractionated, diverse and competitive as the forest products industry, it is difficult to rally all interests to a single cause. But there never was a time when it was more important to do so. ■

THE AUTHOR is communications manager, Northwest Region, Potlatch Corp., Lewiston, Idaho, and former vice president/communications of Northwest Forestry Assn., Portland, Ore.

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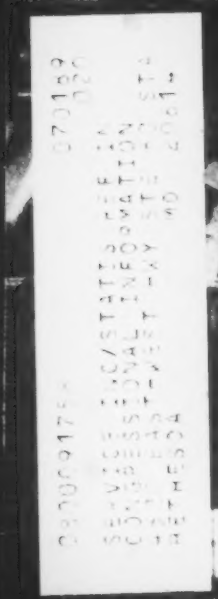

PANEL REVIEW '89

Smooth start raises OSB production goal

1989 Volume 116 Number 4

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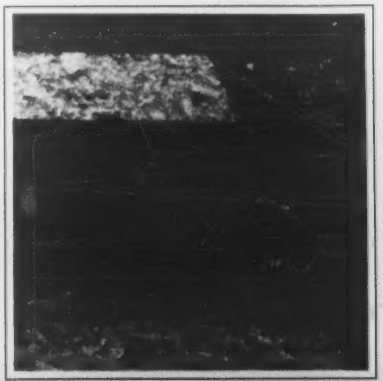

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The margins weren't as great last year, but new production, consumption records were set nonetheless in structural panel, particleboard and MDF categories. Export markets were strong

Strong panel markets shatter records again

San Francisco, California

Again last year, production records fell in most elements of the wood-based panel industry in the United States. The margins were smaller than a year before, but a record is a record—especially for a year in which the crucial housing market continued to soften.

Structural panels, particleboard and medium-density fiberboard registered higher figures. Hardboard shipments again declined in volume. Figures for the decade are shown in the table at the bottom of this page. In summary:

- Structural panels (softwood plywood, oriented strand board, waferboard and oriented waferboard) as a group accounted for production of 27.2 billion ft² (⅜-in. basis), exceeding the 1987 mark by less than 1%.
- Particleboard shipments, estimated at 3.8 billion ft², were up 3.3% from 1987.
- MDF shipments for 1988 were estimated at 942.6 million ft², an increase of 4.8% over the year before.
- Hardboard shipments last year dropped 6.2% to 5.1 billion ft².

Growth trends for all panel products were interrupted by the recession of 1980-82, although by 1983 structural panel and MDF segments had eclipsed pre-slump production figures to set new records, broken annually ever since.

While particleboard shipments have been climbing steadily since a low point in 1982, it was not until last year that the annual volume set an all-time record.

Looking at the decade, comparison of 1988 and 1978 figures reveals MDF gained 85.4%, structural panels improved by 36.3% and particleboard netted a 2.9% increase, while hardboard declined by 34.4%.

Canadian panel output, with the exception of waferboard, declined marginally in 1988 (see sidebar, opposite page).

Structural panels

While 1988 was the sixth consecutive record year for structural panel production, it was the first in which softwood plywood alone failed to register a gain.

Plywood represented 83% of the production total, approximately 22.6 billion ft² versus 23.3 billion ft² the year before. Non-veneer panels comprised the balance of some 4.6 billion ft², up from just under 4 billion ft².

The overall gain was realized in spite of plywood production lost due to strikes in the West during 1988, and declines in both housing and nonresidential construction markets. On the plus side were increases in demand from remodeling (up 6%), industrial (up 3% and export (up 25%) sectors.

Structural panel exports broke the 1 billion ft² mark in 1988 for the first time, according to the American Plywood Assn. At 1.004 billion ft², exports exceeded the 1987 record by 208 million ft².

This performance was credited by Tom Fast, APA director of international operations, to favorable exchange rates, strengthening economies worldwide, continuing progress in reducing tariff and other import barriers, and strong international promotion by APA and the USDA Foreign Agricultural Service.

Approximately 78% of U.S. structural panel exports last year went to Europe, with the United Kingdom taking the greatest volume. Strong percentage gains were recorded elsewhere in Europe, plus the Caribbean, Mexico and Japan.

U.S. Panel Production, 1978-1988

(thousand ft²)

Year	Structural panels (⅜-in. basis)	Particleboard[1] (¾-in. basis)	Hardboard[1] (¼-in. basis)	MDF[1] (¾-in. basis)
1978	19,964,000	3,720,369	7,800,000	508,416
1979	19,653,000	3,376,488	7,687,798	506,728
1980	16,468,000	2,949,897	6,140,000	493,140
1981	17,023,000	2,869,352	6,104,000	516,102
1982	16,402,554	2,393,066	5,586,918	446,157
1983	20,821,342	3,009,343	7,302,702	604,323
1984	21,967,917	3,195,586	6,837,118	633,974
1985	22,838,170	3,330,517	6,300,146	684,593
1986	25,632,830	3,602,757	5,822,328	780,598
1987	27,001,000	3,705,560	5,457,508	899,282
1988	27,202,822	3,828,745[2]	5,117,857	942,579[2]

[1] Shipments; [2] Estimated.

Despite growth in exports and other non-housing markets, the expected further softening of housing demand is expected to hold back structural panel production this year. APA currently projects 1989 production at 26.5 billion ft². By 2010, however, the association is looking for output of 27.2 billion ft².

Particleboard and MDF

Particleboard output, measured by shipments, put 1988 in the record books with an estimated total of 3.8 billion ft² (¾-in. basis). The previous record, set in 1978, was 3.7 billion ft² (see table for exact figures).

The U.S. particleboard industry has grown rapidly, both in terms of consumption and plant capacity. The latest annual capacity survey by National Particleboard Assn. places U.S. mat-formed particleboard mat capacity at 4.311 billion ft² as of Jan. 1, 1989. Capacity should grow to 4.379 billion ft² by the end of 1979, according to NPA.

The success of MDF in the marketplace continues to be demonstrated by growth in consumption and plant capacity. Shipments stumbled only slightly during the early-eighties recession before recovering in 1983, the first year in which the 600 million ft² level was exceeded. Annual increases have continued since then.

Last year's estimated shipment volume of 942.6 million ft² compares with U.S. plant capacity of 1.202 billion ft² at the beginning of 1989, according to the NPA survey. Capacity should rise to 1.252 billion ft² by the end of the year.

To step up promotion of particleboard and MDF applications, the NPA has established the Particleboard/MDF Institute as a separate and independent organization.

NPA members are automatically regular members of the institute, beyond which contributing memberships are open in five categories. Membership is open to suppliers of equipment, chemicals, coatings and laminates.

"The institute will work aggressively to expand the customer base as well as to increase the use per unit of particleboard and MDF," it was explained.

Hardboard

Hardboard production in 1989 should just about equal the 1988 level of 5.1 billion ft² (⅛-in. basis), according to C. Curtis Peterson, executive vice president of American Hardboard Assn.

Peterson, formerly staff vice president, succeeded James E. Nolan, who retired at the end of 1988 after 20 years as AHA's chief staff executive. ■

B.C. gain counters national plywood decline

VANCOUVER, B.C.—With the exception of waferboard, production of wood-based panels across Canada declined slightly in 1988, as compared with the year before. Levels remained ahead of 1986, however.

Statistics Canada reported softwood plywood output last year at 2 [illegible]58 m³, a 3% slide from the 1987 volume of 2,229,000 m³. In 1986, a lengthy strike in British Columbia pushed nationwide softwood plywood production down to 1,876,896 m³.

Particleboard production last year came to 1,213,364 m³, a level 10.5% below the 1987 figure of 1,355,107 m³. Production in 1986 was 1,139,253 m³.

Waferboard output, however, rose last year to 1,658,560 m³, a gain of 3.2% over the 1987 level of 1,607,171 m³. The 1966 figure was 1,347,638 m³.

British Columbia went opposite the national trend in softwood plywood production. Council of Forest Industries of B.C. member mills turned in a production figure for the year of 1.621 billion ft² (⅜-in. basis), 4.7% above 1987 production of 1.548 billion ft².

Peter Metcalfe, COFI's manager of market development, credited the increase to (1) continued strength in domestic markets, particularly the exceptionally-strong construction sector in Ontario; (2) continued expansion of the specialty panel market domestically and overseas; and (3) increased productivity and efficiency of member mills through significant capital investments in new equipment.

While the strong housing market in Canada is expected to waver in 1989 due to increasing interest rates, Metcalfe expects the plywood industry to operate at near-capacity levels.

In Canada, the priority is to regain market share in housing lost to composite panels. The introduction of COFI-ROOF, a plywood roof sheathing with a patented edge profile, is expected to help accelerate this process. A technical specialist will be retained to expand the industrial use of plywood in eastern Canadian markets.

Exports of B.C. plywood in 1988 increased 6% to over 260 million ft² from 245.2 million ft² in 1987. Overseas observations:

- Timber frame construction should continue to expand as a preferred system for residential building in the United Kingdom, Metcalfe said. COFI members are major suppliers to this market.
- Builders in West Germany are recognizing the benefits of wood frame housing and are adapting it to their own particular building requirements. COFI Exterior plywood is the only North American plywood which has DIN acceptance.
- In 1988, Japan granted COFI approval as a Foreign Testing Organization, allowing members to apply the Japan Agricultural Standards stamp to their plywood production. Thus costly reinspection in Japan is not required.
- COFI is building a demonstration project in Beijing, China, to promote wood frame construction. Three buildings will utilize B.C. lumber and plywood in systems commonly used elsewhere: trusses, web-joists, stressed skin panels and other standard lumber and plywood applications. ■

***Wood frame construction** is the focal point of a demonstration project in Beijing, which the Council of Forest Industries of B.C. is undertaking.*

A major study conducted recently shows limited growth by the year 2000 for high-density and medium-density overlays; waferboard siding is a notable exception

Industrial overlay markets: forecasts for HDO and MDO

Oradell, New Jersey

Industrial medium and high-density overlays are used on plywood and waferboard for a variety of purposes: to produce smooth, paintable surfaces; to make smooth surfaces for concrete forms; to provide a durable impenetrable surface skin for signs and sidings; and to hide the pattern of reconstituted wood with a paintable simulated wood grain.

Medium-density overlays (MDO) and high-density overlays (HDO) are used in a range of markets, such as concrete forms; exterior and interior signs; truck doors and sides; residential siding, store fixtures; millwork; and miscellaneous residential construction applications. Recently George Carter & Affiliates (GC&A), a consulting firm based here, completed a major four-month investigation of the markets in the U.S. for MDO and HDO.

The report traces the use of the two types of overlays from 1979, when about 255 million ft² (surface measure basis) of overlaid panels were produced, to the year 2000, when it is forecast that nearly 950 million ft² will be consumed.

One of the important aspects of the research is the analysis of which segments will participate in this growth, which are holding steady, and which, if any, are losing ground.

GC&A found total consumption of panels with industrial overlays (nondecorative) in the U.S. in 1988 amounted to 548 million ft², of which HDO accounted for 97.6 million ft², MDO accounted for 445.9 million ft², and imports accounted for 4.5 million ft². For a further breakdown, see Table 1.

Table 1—U.S. industrial overlay consumption, 1988

High-density panel products consist of:	
• Concrete forms	27.5 MMSF
• Industrial uses	17.9 MMSF
• Door skins	42.2 MMSF
• Other uses	10.0 MMSF
Medium-density overlaid panel products consist of:	
• Concrete forms	67.1 MMSF
• Industrial uses	125.0 MMSF
• Plywood siding	25.8 MMSF
• Waferboard and particleboard siding	220.0 MMSF
• Other uses	8.0 MMSF

According to the report, overlaid panel consumption in the U.S. has increased about 113% since 1979, from 257 million ft² to more than 548 million ft². During that period, HDO has increased 27% and MDO, excluding waferboard siding, has increased 58%. Waferboard siding has increased from zero to 160 million ft².

The report forecasts that consumption of overlaid panels will increase 72% by the year 2000. However, at the present time, it does not appear that HDO products will share in much of this growth. The use of MDO products will increase, but most of the growth is expected to come from waferboard siding, forecast to grow 250%.

The current research, which involved more than 830 interviews, did not turn up any significant new markets which might develop for high-density panels in the next 10 to 12 years. Carter notes the following findings:

• There is evidence to suggest that consumption might be increased slightly if wider distribution was achieved. However, it is difficult to ascertain if it is worth the cost of trying to get a large number of geographically scattered, largely rural dealers and wholesalers to inventory HDO plywood, and to find customers for the product.

• Nearly 100 interviews with concrete forms manufacturers and users suggest that HDO panels have reached an equilibrium with steel. Thus, consumption will move with the basic economic indicators, and not show any further market penetration.

• The use of HDO in industrial applications is limited, and no evidence is currently visible to suggest that even moderate opportunities may exist.

In the MDO sector, the story is much the same: No significant new markets appear to be developing.

The research team notes that usage in signs is growing slightly. However, competition from aluminum is strong, and wood panels are not forecast to increase their market share. Usage in fixtures and displays is exhibiting some growth, but competition from decorative overlays and a variety of substrates makes extensive growth unlikely. In making the prediction of explosive growth for waferboard siding, Carter notes that its use will increase rapidly due to active promotion, cost competitiveness and growing market acceptance.

The siding materials most likely to be affected by overlaid waferboard are hardboard, lower grade cedar boards and plywood. Smooth and beaded hardboard, top-quality cedar, brick and vinyl will resist the impact of overlaid waferboard, Carter says. ■

THIS ARTICLE highlights only a few of the findings in the Carter study, published in three volumes. GC&A also has published studies on residential sidings and decorative overlays. For details, contact George Carter & Affiliates, 767 Park Ave., Oradell, N.J. 07649. Tel. 201-265-7766.

The decision about how to determine a site's productive potential is a major one for foresters. High production is not the only consideration

Determining optimum yield from forest plantations

A GIVEN AREA of land can only produce a certain quantity of wood.

These days, a great deal of emphasis is put on maximizing the production of wood on all lands. The volume produced largely depends on the foresters who, much of the time, underestimate the potential of their lands.

It is, of course, essential not to let the aspect of maximum quantity of production totally dominate management decisions. Other criteria may be of equal or even greater importance. Certainly a high volume of production is critical in fuelwood plantations and carries much weight in successful pulpwood plantation programs. But especially where the end use is in the form of solid-wood products, properties such as strength or appearance may be more important.

Normally, quality and quantity are not mutually exclusive. A skilled silviculturist should be able to make use of management systems which simultaneously guarantee a high volume of production and acceptable wood quality. Only when it comes to plantations managed for certain purposes—e.g., those established for erosion control or watershed protection—does high wood production become of minor importance.

Considerations about climate

A major factor which we cannot do much about is the climate. The climate of boreal and temperate areas, with lower temperatures and little or no growth during the winter, normally results in lower production than in the tropics. This cannot be fully compensated for by the longer summer daylight hours of the high latitudes or by often higher soil nutrient levels or less drought stress.

Production from managed forests and plantations in various parts of the world is indicated in Table 1. These figures in no way indicate maximum production. In many or perhaps even most cases, average growth rates shown in the table can be at least doubled by introducing known silvicultural treatments.

How to boost productivity

The greatest increases in productivity have been reached through a number of advanced tree improvement activities.

Consider, for instance, the plantations of Aracruz Forestal in Brazil. Through the introduction and improvement of eucalypts on low productive grass lands—where less than 10 years ago the stands produced "only" around 30 m^3 ha/yr—the plantations are now producing 70 m^3 ha/yr, and the very best clones are capable of producing over 100 m^3 ha/yr.

Another example from the temperate areas—less dramatic, certainly, but demonstrating the possibilities—is from Sweden. By replacing the indigenous Scots pine with the exotic lodgepole pine, production yield increases of 50%

Fig. 1—Comparison of top shoot length, after use of three site prep treatments

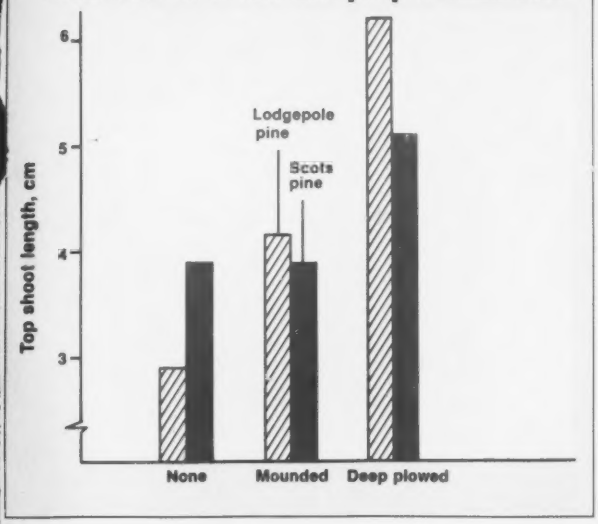

Fig. 2—Comparison of tree height in a fertilizer trial

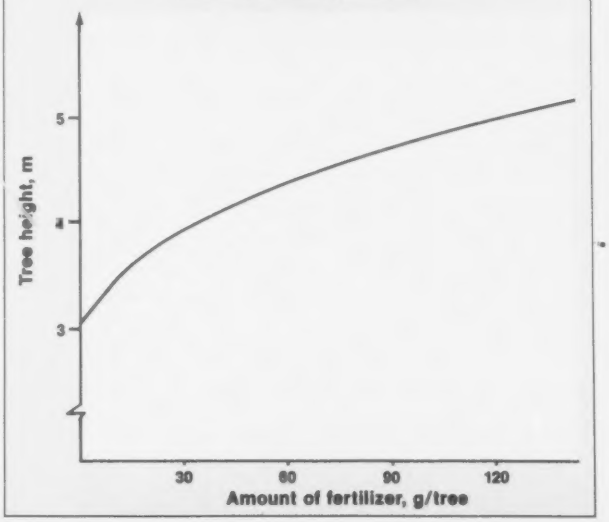

TABLE 1—Average growth rates in managed forests and plantations

Region	Yield (m^3/ha/yr)
Siberia	1 - 1.5
Scandinavia	1.5 - 5
United Kingdom (conifers)	7-12
New Zealand (pines)	15-30
Tropical pine plantations	15-45
Tropical eucalypt plantations	10-60

have been reached on suitable sites.

To fully utilize the production potential of the best regeneration material, it must be put in the most favorable environment possible and given suitable silvicultural treatments. Only then will it show its capacity and respond more vigorously than less productive material.

One example of the type of response to be expected, taken from a trial in northern Sweden on a very poor and cold site, is presented in Fig. 1.

The illustration shows top shoot length for two years after planting, where three different site preparation treatments were used. Note the superiority of the fast-growing lodgepole pine on the most intensively prepared site, and its inferiority when no site preparation was carried out.

On sites with various kinds of nutrient deficiencies, fertilization often gives good response and may in fact be a prerequisite of forest plantations. Fig. 2 demonstrates the response to fertilization of young *Eucalyptus camaldulensis* trees planted at Bai Bang, Vietnam. It illustrates tree height in a fertilizer trial one and a half years after planting. Trees were fertilized at planting with various amounts of super-phosphate.

The economy of fertilization depends on the cost of fertilizers, interest rates, rotation length and the magnitude and duration of the response. In many situations, it may be a better alternative to plant a less demanding, but then also less productive species, rather than to be forced to fertilize regularly.

Is maximum production the goal?

How, when and in what form the harvest becomes available is actually just as important as the absolute amount of wood produced, since this will decide the economy of the forest operation.

The denser the plantation, the faster the volume production potential of an area is obtained; the trees will be able to occupy the total growing space quickly.

There are, however, at least two major disadvantages to dense planting: a high stand establishment cost and the small size of the trees to be harvested. With good thinning practices, trees of an acceptable size still may be produced, but the high establishment cost remains. Further, there may not be much use for the trees harvested in the thinning, in itself a costly operation.

The foresters must decide how much volume can be sacrificed and how much time spent to optimize monetary returns from a plantation. And this is always different from maximizing the total wood production from the site. Various methods to control costs and returns are available. Say, for example, that large trees for saw timber are needed:

• One alternative would be to plant at close spacing and thin at correct times. The main advantages are a good utilization of the site's productive capacity, possible use of trees which might otherwise be killed from competition, good self-pruning and fewer problems with weeds because of early canopy closure.

The major disadvantages are high initial costs and the need for the high-cost removal of many small, low-quality trees and of the longer rotations. Much damage can also be caused to the growing stand during the thinning operation.

• Another alternative is to plant more openly, not thin and make an early final harvest of large trees. Obvious advantages are a lower planting cost and no thinning problems. Disadvantages are that parts of the land will not be utilized for parts of the rotation because of the low stocking and good opportunities for weeds to get established. Even if all trees can be harvested and utilized, they may be of poor quality (e.g., large limbs) because of lack of competition early in their life. Availability of improved genetic stock or suitable pruning makes this alternative more interesting.

The decision on how to handle a stand's or site's productive potential is a major one. A high volume production is not enough. The wood must be suitable for whatever is to be produced from it.

For many products and purposes, the weight rather than volume would be the best way to measure the production. Species with the highest productivity or silvicultural treatments which favor maximum growth may not always produce the kind of wood that is needed. ■

A first-generation **Pinus caribaea** ***stand in Vietnam; it needs improvement.***

THIS ARTICLE was prepared by Per H. Ståhl and Göran Nilsson Axberg, forestry consultants and silviculture specialists with Interforest AB. For more information from Interforest, circle the number below on the reader service card in this issue.

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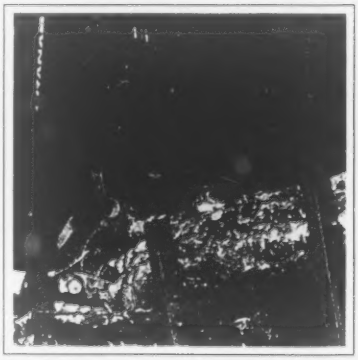

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As the pressure on timber supply increases due to court injunctions and an endless array of lawsuits, industry needs to recognize the long-term threats of these actions

Timber supply woes worsen as suits lock up lands

By Michael D. Sullivan

Lewiston, Idaho

As this is being written, attorneys are marshalling their resources on both sides in the various court cases involving the northern spotted owl. The stakes are high. At risk is the foreclosure of nearly 2 billion bd ft of annual timber sales on federal lands in western Oregon and western Washington.

The impact of such an event on the region's federally dependent mills will, of course, be devastating. Tens of thousands of Northwest woodworkers could be forced into unemployment.

But there are broader implications of these actions for the wood industry at large.

Reduced supply, higher prices

One of the obvious results of reduced supply is higher prices. Since most national forest and other federal timber is sold at open public auction, just the threat of a shortage can send bid prices skyrocketing.

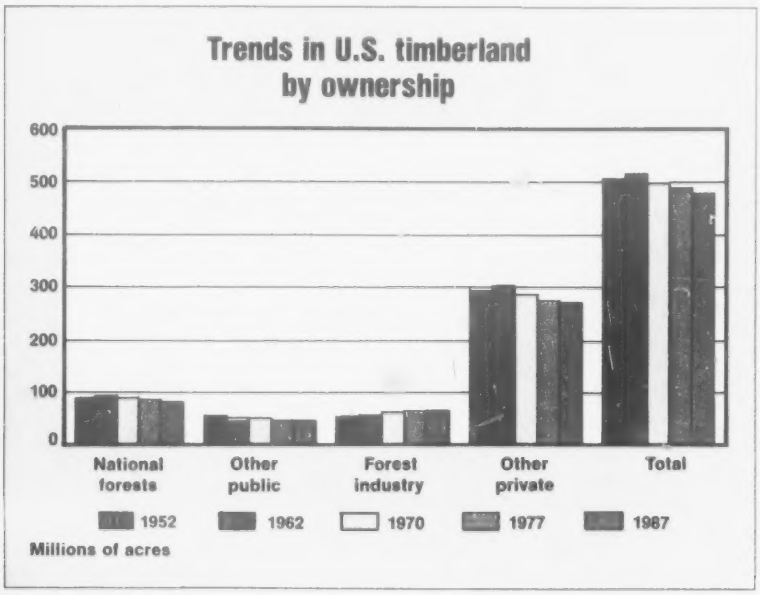
The threats are now real and the effects on bid prices are as predicted.

From the third quarter of 1987 to the third quarter of 1988, U.S. Forest Service stumpage prices increased from $130 per thousand bd ft to $160 per thousand.

The increases west of the Cascades have been even more dramatic in recent months, reflecting the increasing pressure on supply from court injunctions and the spotted owl suits.

Wholesalers and retailers haven't yet felt the sting of these shortages because inventories haven't yet been affected. Timber currently being harvested was purchased anywhere from a few months ago to a few years ago. The decline in harvest and the resulting impact on inventories won't be felt until the current shortages feed through the pipeline.

It is unfortunate, but too many elements of our industry fail to recognize a threat until it affects them directly. For the benefit of those who feel the current cries of "timber shortage" are just so much applesauce and wood demand will always be met, a bit of history might be appropriate.



Wood demand remains high

During the recession in the early 1980s, doomsayers arose with predictions that the housing recession was the harbinger of long-term trends which would permanently reduce wood demand. A few went so far as to predict that all of this would keep the nation's future annual wood consumption somewhere in the 35 billion bd ft range. Even the U.S. Forest Service, which had consistently projected a doubling of wood demand, backed off a bit in its 1984 Resource Planning Act Update.

Of course the reverse has occurred. Wood demand reached an all-time high of 50 billion bd ft in 1987, with 1988 and 1989 not far behind that record volume. Once again, the projections are for wood demand to nearly double in the next century.

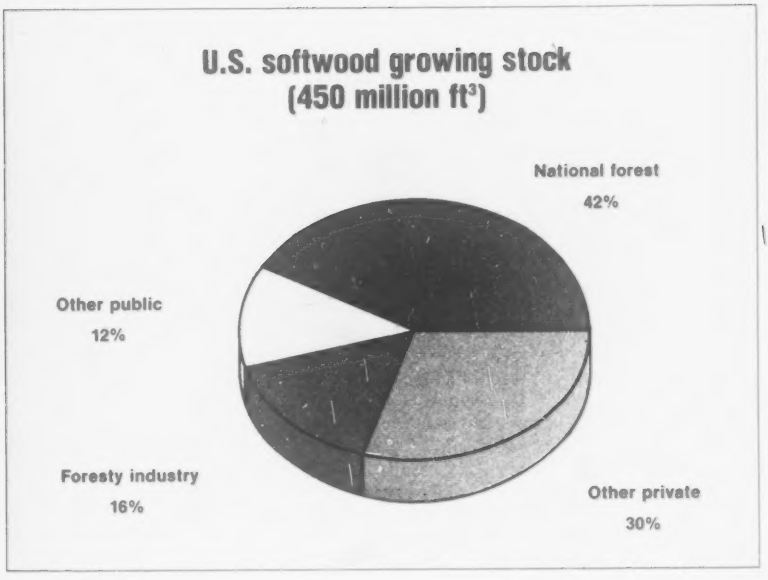
Wood continues to be a preferred construction material. Fortunately, it is found in abundance in the U.S., and this country has the knowledge not only to provide for its renewal but also to increase the level of production.

Instead of planning to increase domestic wood supplies, the U.S. continues to be a net importer of wood products. Still more amazing is the fact that the imports are coming from countries with neither the inventory nor the productive capacity of U.S. forests.

This raises several questions to which everyone involved in the wood business should be seeking answers. Where's the wood? Who owns it? If current domestic demand isn't being met, how will we meet increased future demands?

U.S., Canada, U.S.S.R.

A quick look at world softwood inventories shows that North America and the Soviet Union have the largest, with the U.S. and Canada clearly the leaders from the standpoint of produc-



tive capacity. And between those two countries, the U.S. is the standout both in terms of inventories and productive capacity. (Ironically, the major exporter of the wood to the U.S. is Canada. But both U.S. and Canadian researchers indicate that Canadian resource cannot keep up this pace indefinitely.)

The U.S. has an estimated softwood growing stock of about 450 million ft³. Some 42% is contained on the 85 million acres of forestland contained in the 190-million-acre national forest system under the jurisdiction of the U.S. Forest Service. Forest industry companies have about 16%, and smaller private ownerships contain 30%. Other federal agencies, states and municipalities control about 12%.

Western wood basket

About 300 million of the 450 million ft³ of softwood growing stock is found west of the 100th meridian. About 80% of that is on the national forests.

It's pretty clear that the nation's demands for softwood will not be achieved unless the national forests make a significant contribution. In the past decade, national forests have contributed somewhere between 10 and 12 billion bd ft annually. Contrary to some preservationist claims, the numbers haven't been rising. Moreover, the Forest Service is proposing a major reduction in the maximum allowable sale quantity from the national forests.

Still more reductions

But the preservationist community isn't satisfied with the proposed reductions and continues to push to cut the national forest timber sales by about half — to six billion bd ft annually. They have even presented questionable "research," heavy to computer models based on erroneous assumptions, to show the reductions will have no impact on consumers.

Fortunately, they haven't been able yet — to sell these draconian measures to Congress or the Forest Service. But they continue to use a host of legal and administrative tactics to bring about the same result. If they are successful in reducing timber supplies from national forests, the results will be felt in all sectors of the industry.

Building some certainty into the supply equation from federal lands is critical to the industry's future. To do that, Congress must change the laws and policies which enable obstructionists to block federal agencies in their efforts to provide that certainty. ■

THE AUTHOR is communications manager, Northwest Region, Potlatch Corp., Lewiston, Idaho, and former vice president/communications of Northwest Forestry Assn., Portland, Ore. Sullivan notes that data in this article are from "An Analysis of the Timber Situation in the United States, 1989-2040," USDA Forest Service.

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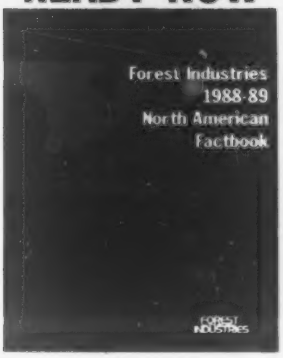

This all-new reference is the most complete product guide and industry factbook ever compiled about lumber and panel producers in the U.S. and Canada. It has been designed by the editors of *Forest Industries* to answer the most frequently asked questions about the industry.

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JUNE 1989

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EXPO II

High-tech mill makes

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JUNE

Mills

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Flexible bandmill focuses on timbers
Union Camp rebuild project in Opelika, Ala., is oriented toward gaining maximum grade recovery. Mill produces high-quality small timbers.

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After brief downturn, panel markets may soar
Participants at the 23rd International Particleboard/Composite Materials Symposium were told that capital required to replace old plants and meet new capacity demands may consolidate ownership into fewer hands.

30
Play 'what if' games with modeling software
New computer software called Sof$aw allows mill managers to evaluate operational changes without the risk and expense of failure.

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Business is booming for specialty product producer
To meet the growing demand for specialty products, Elk Wood Specialties in Maple Ridge, B.C., has made value-added its business.

Expo Digest

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Record turnout forecast for Expo '89 in Atlanta
The Southern Forest Products Assn. will hold its biennial logging and mill equipment show in Atlanta June 8-10. In this special section, we list show exhibitors and highlight some of the equipment that will be on display.

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Maintenance program pays dividends in big timber
Weekend preparation allows logging contractor Jerry Sercer of Rochelle, Ga., to maintain a consistent low-downtime operation.

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Self-supervision: a way to save lives
There are lots of reasons to take risks, but none are worth dying for. Here's a good way to assess risks in logging.

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A balancing act: striving for integrated management
At the Canadian Pulp & Paper Assn.'s annual woodlands meeting, one of the sessions focused on the need for integrated resource management.

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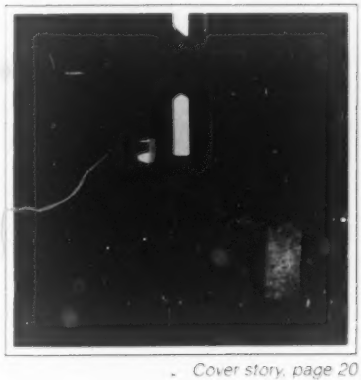

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Corporate earnings up; housing turnaround seen

SAN FRANCISCO, CALIF.—Corporate financial performance during the first quarter of 1989 indicated strength among integrated U.S. producers of forest products, buoyed by sustained high demand for pulp and paper products.

In another important sector of the economy, housing starts continued a spring slide through April but declining mortgage interest rates have revived predictions of an imminent turnaround.

As the adjoining table shows, earnings for many companies increased in double-digit percentage numbers versus the first quarter of 1988.

While solid-wood products contributed little to the quarterly profits of many integrated companies, the news from that sector was not all bad.

Louisiana-Pacific Corp. reported the best first-quarter sales and earnings in its history. L-P derived 84% of its sales and 62% of its operating profit in the first quarter from building products.

Building product demand was active and price levels were firm, noted chairman and president Harry A. Merlo, who also acknowledged record demand and price levels for market pulp.

Decreased reliance on housing markets has helped Boise Cascade Corp.'s wood products business, said chairman and CEO John B. Fery. Boise also turned in a record first quarter; building products represented 21% of sales and 14% of income from operations.

Georgia-Pacific Corp. and Potlatch Corp. reported profits for building products down from first-quarter 1988 despite a slight increase in sales.

Housing starts slip

Meanwhile, the housing slide predicted for this year continues to come true. April figures from the Commerce Department show starts at a seasonally adjusted annual rate of 1.361 million units, down 2.7% from a revised March rate of 1.399 million. The March figure was below February's rate by 4.5%.

The April rate was below that of April 1988 by 13.6%, and the lowest since December 1982. Yet building permits fuel optimism: the annual rate rose 7.2% in April to 1.318 million units after diving 12.3% the month before.

April starts were strongest in single-family homes (up 5.1%) and structures with two to four units (up 33.3%). Larger apartments and condos crashed 29% to the lowest level since June 1982. Actual starts totaled 131,100 units in April, up 13% from the previous month. Mortgage interest rates remain a worry, but recent downward movement in market rates has some analysts looking for a quick turnaround in home building. Others, including most observers close to the industry, are standing by projections in the neighborhood of 1.4 million starts for 1989. ■

U.S., Canadian forest industry results, first quarter 1989 ($ millions)

Company	Sales	% change 1989/88	% change Earnings[1]	1989/88
Abitibi-Price Inc.	C810.0	1.3	C26.3	(40.2)
Boise Cascade Corp.	1,102.2	8.4	78.2	14.2
Canadian Pacific For. Prods	C711.0	(3.4)	C65.1	(12.4)
Canfor Corp.	C202.0	(31.5)	C30.2[2]	4.1
Champion International	1,288.7	1.8	113.5	11.3
Chesapeake Corp.	188.0	16.5	12.9	29.9
Domtar Inc.	C695.0	3.3	C26.0[3]	(29.7)
Federal Paper Board	284.7	16.0	47.1	115.4
Fletcher Challenge Canada	C335.6	(5.8)	C36.1	(20.5)
Georgia-Pacific Corp.	2,447.0	15.7	154.0	45.3
Great Northern Nekoosa	986.4	16.9	93.3	19.2
Int'l Forest Products Ltd.	C85.3	(9.2)	C1.9	(68.3)
International Paper Co.	2,600.0	13.0	223.0	40.3
Louisiana-Pacific Corp.	467.0	12.8	39.9[4]	41.0
MacMillan Bloedel Ltd.	C807.0	1.3	C73.4	(19.9)
Noranda Forest Inc.	C1,200.0	3.4	C58.0[5]	(7.9)
Pope & Talbot Inc.	147.5	27.5	9.4	18.6
Potlatch Corp.	297.4	15.2	35.9	35.5
Slocan Forest Prods. Ltd.	C45.4	(8.0)	C2.0	(45.9)
Stone Container Corp.	1,127.4	27.9	86.8	32.9
Temple-Inland Inc.	462.6	8.7	54.5	19.5
Union Camp Corp.	706.2	9.4	79.7	18.0
Weldwood of Canada Ltd.	C194.4	(6.9)	C16.2	4.5
Westvaco Corp. (1/31)	554.6	10.6	48.7	29.5
Weyerhaeuser Co.	2,321.3	8.6	148.1	29.1
Willamette Industries	437.8	8.2	39.8	(1.4)
WTD Industries Inc. (1/31)	89.2	30.6	0.7	304.5

1. Income after taxes, from continuing operations, excluding most significant nonrecurring items in both years. 2. Net sales reflects equity accounting for 50% interests in Howe Sound Pulp & Paper and Canfor-Weldwood Distribution. 3. Year-ago figures restated to account for sale of a high-pressure laminates business. 4. Year-ago figures restated to reflect spinoff of Fibreboard Corp. in June 1988. 5. Year-ago figures restated for an accounting change.

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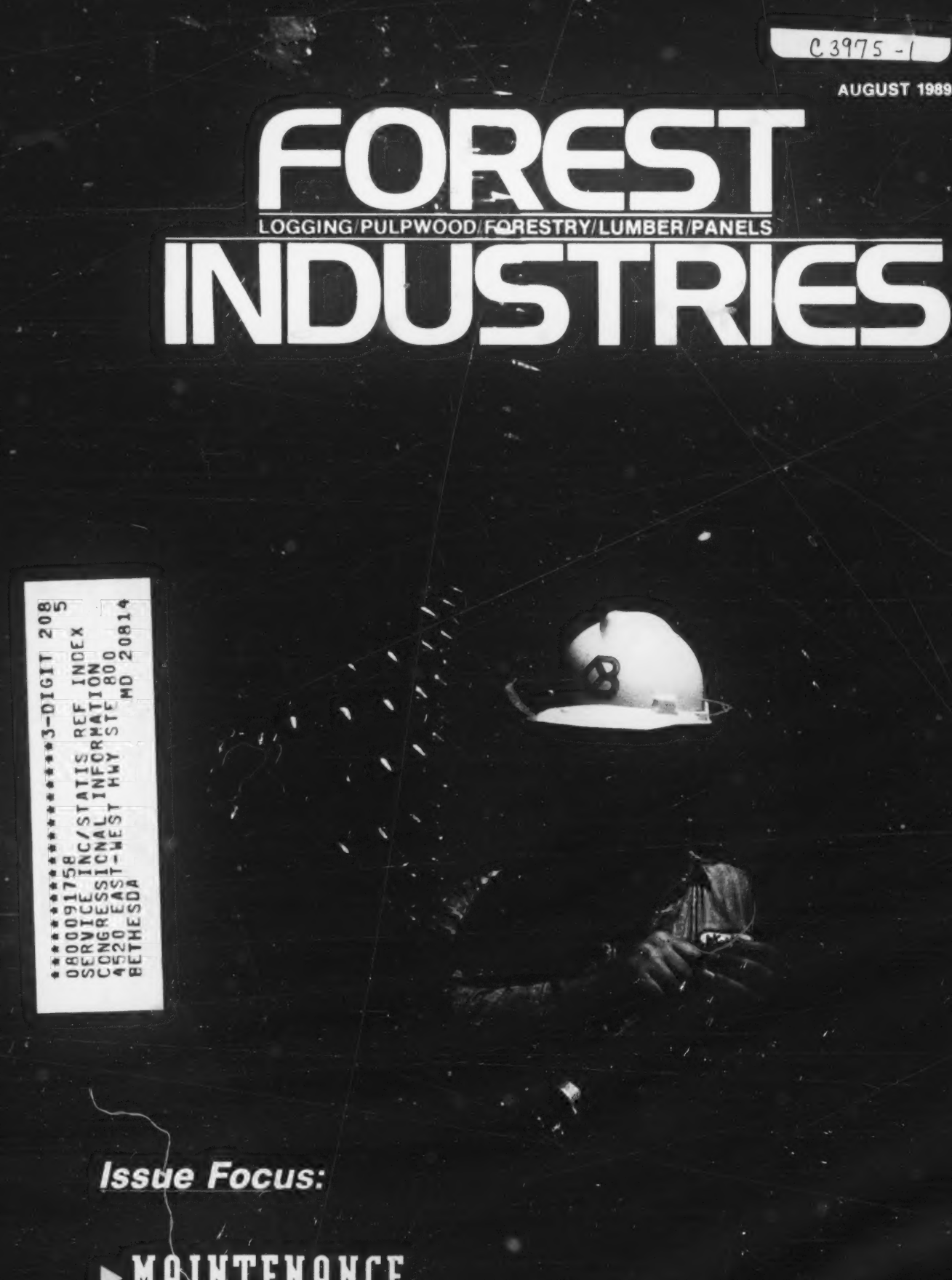

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COVER: Lubrication is essential part of PM program at Diamond-B Lumber Co., Philomath, Ore. Photograph courtesy of Dubal, Beck, Harris & Associates, Portland, Ore. Story begins on page 22

INDUSTRY LEADERS

Top 20 producers: no surprises in '88

SAN FRANCISCO, CALIF.—Fully one-third of all the lumber manufactured in North America comes from the top 20 producers, each of which produces more in a single day than many companies produce in a year.

The annual FOREST INDUSTRIES lumber survey turned up no surprises in the top 20 this year. Nine are Canadian, with a combined output of 8.622 billion bd ft, or 34% of the Canadian total; and 11 are U.S.-based, with a combined output of 14.168, or 29% of the U.S. total.

(It should be noted that Table 1 technically shows only the top 19 producers. MacMillan Bloedel Ltd. and Sierra Pacific Industries are tied for ninth place; each reported an '88 production of 925 million bd ft. Mac-Blo got the nod by virtue of its place in the alphabet.)

As shown in Table 2, total U.S. and Canadian lumber production fell in 1988, down 2% from '87's record high. A further decline is forecast for 1989, due in part to serious timber supply restrictions in the West (see p. 7).

The latest edition of the FOREST INDUSTRIES' *North American Factbook*, due off press in late September, includes a list of 800 top lumber producers in the U.S. and Canada. The list gives mill-by-mill production figures for each company, plus a breakdown of hardwood and softwood output.

The *Factbook* contains similar data about panel producers, plus news about mergers/acquisitions, capital spending, imports and exports, and more. For details, see p. 36. ■

TABLE 1—Top 20 lumber producers, U.S. and Canada

Company name & headquarters	# of mills	1988 production (million bd ft)	Rank in 1987
1. Weyerhaeuser Co. Tacoma, Wash.	36	2,942	1
2. Louisiana-Pacific Corp. Portland, Ore.	59	2,438	2
3. Georgia-Pacific Corp. Atlanta, Ga.	46	2,323	3
4. Fletcher Challenge Canada Ltd. Vancouver, B.C.	17	1,735	NA
5. Weldwood of Canada Ltd. Vancouver, B.C.	8	1,107	13
6. West Fraser Mills Ltd. Vancouver, B.C.	6	1,085	6
7. Canfor Corp. Vancouver, B.C.	8	1,040	5
8. WTD Industries Inc. Portland, Ore.	21	1,039	10
9. MacMillan Bloedel Ltd. Vancouver, B.C.	9	925	8
10. Sierra Pacific Industries Redding, Calif.	9	925	12
11. International Paper Co. Dallas, Texas	12	894	7
12. Boise Cascade Corp. Boise, Idaho	15	776	9
13. RSG Forest Products Inc. Kalama, Wash.	6	757	15
14. Roseburg Forest Products Co. Roseburg, Ore.	5	749	18
15. Northwood Pulp & Timber Ltd. Prince George, B.C.	5	724	14
16. Champion International Corp. Stamford, Conn.	11	710	11
17. Int'l. Forest Products Co. Vancouver, B.C.	7	700	17
18. Slocan Forest Products Ltd. Richmond, B.C.	6	660	22
19. Westar Timber Ltd. Vancouver, B.C.	5	646	16
20. Pope & Talbot Inc. Portland, Ore.	6	615	19

NOTE: Companies are ranked according to data gathered by FOREST INDUSTRIES.

TABLE 2—U.S. & Canadian lumber production, 1979-1988 (billion bd ft)

Year	U.S. Softwood	U.S. Hardwood	Total U.S.	B.C. Coast & Interior	Canada East of Rockies	Total Canada	Total U.S. & Canada
1979	31.432	9.069	40.501	12.518	6.480	18.998	59.499
1980	26.246	8.860	35.106	11.980	6.923	18.903	54.009
1981	24.676	7.147	31.823	10.424	6.473	16.897	48.720
1982	23.787	7.668	31.455	10.109	5.887	15.996	47.451
1983	29.726	8.556	38.282	13.043	7.486	20.529	58.811
1984	31.174	9.865	41.039	13.078	7.901	20.979	62.018
1985	31.321	8.866	40.187	14.003	8.952	22.955	63.142
1986	35.273	10.024	45.297	13.335	10.097	23.432	68.729
1987	38.235	11.160	49.395	15.888	10.385	26.273	75.668
1988	36.904	11.446	48.350	15.574	10.111	25.685	74.035

SOURCES: NFPA & Statistics Canada.

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SEPTEMBER 1989

FOREST INDUSTRIES

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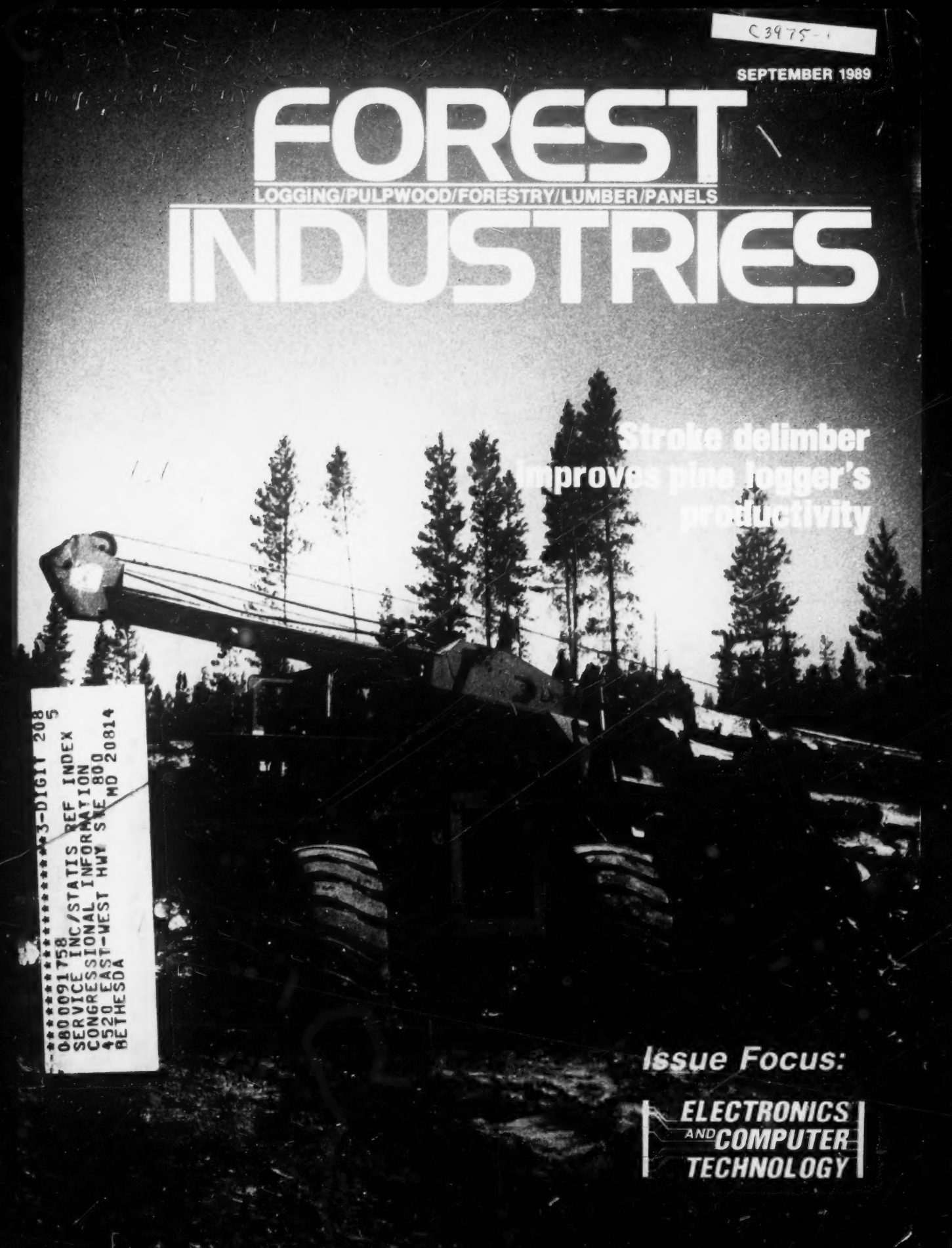

Stroke delimber improves pine logger's productivity

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Merchandiser design allows three log sorts

At Canfor Corp.'s mill operation in Grande Prairie, Alta., transverse merchandiser segregates pulpwood, sawlogs, peelers for accurate optimization and fast throughput

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Industry of the future: what to expect by 2000

Sophisticated electronic systems have changed the industry dramatically in the past 10 years; here's a look at what may happen in the decade ahead

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An innovative approach to inventory management

A new inventory management system developed jointly by Northwood Pulp and Timber, Prince George, B.C., and Softwood Systems is up and running at the company's four sawmills

26
Bar code system ensures accurate inventory control

Each day at its Korbel, Calif., mill, Simpson Timber uses more than a thousand bar code tags to track lumber movement. The system allows careful inventory management

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Scanning forum highlights recent advances worldwide

The 3rd International Conference on Scanning Technology in Sawmilling, to be held in October in Burlingame, Calif., will address the latest developments in a rapidly changing field

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Contractor's progress not measured in miles

Lodgepole pine killed, threatened by the mountain pine beetle provides sawlogs, poles, fiber wood for Lee Smith Logging, Chemult, Ore.

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No matter how good the equipment or what kind of machinery you are using, productivity will be reduced if a skidding operation isn't well planned

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NEW JOBS CREATED

Plywood plant slated for eastern Mississippi

STARKVILLE, MISS.—Plans to build a $38.5-million plywood plant moved forward in August with approval of a $3.5-million HUD Urban Development Action grant to the city. The Longview Plywood Co. mill will create 416 permanent jobs and 400 construction jobs, legislators said. Starkville is near the eastern edge of the state.

Vancouver mill to modernize

Employee-owned West Coast Plywood Co. Ltd. has received a C$4-million loan plus a C$2.5-million line of credit from the British Columbia government to help acquire and modernize the Weldwood of Canada Ltd. plywood plant in Vancouver, B.C.

West Coast has been running the mill since last year, when Weldwood said it would otherwise close the operation permanently. ■

CHIPS PART OF DEAL

Pope & Talbot sawmill passes into new hands

OAKRIDGE, ORE.—Pope & Talbot Inc. has sold its 41-year-old sawmill here to Bald Knob Land & Timber Co. for an undisclosed amount.

Bald Knob, which operates a veneer plant at the same site, assumed ownership of the sawmill July 27.

Included in the transaction was a long-term contract under which all wood chips produced by Bald Knob will be supplied to P&T's bleached kraft pulp mill at Halsey, Ore. ■

SHORTAGES A FACTOR

Price strength boosts corporate earnings

SAN FRANCISCO, CALIF.—Strong lumber and plywood prices, influenced in part by preservation-based timber shortages, contributed to good second-quarter financial performance by most U.S. forest products corporations.

For a change, it was the pulp and paper segment that pulled down profits of integrated producers. This was attributed by the newsletter *Pulp & Paper Week* to softening markets for printing and writing grades, serious price erosion in newsprint and flat performance in containerboard.

WTD Industries Inc., wholly in the solid-wood arena, reported record sales and earnings for the quarter and fiscal year ending April 30 (the seventh consecutive record year). Annual sales of $359.6 million were up 22.4%; earnings rose 5.1% to $8.83 million.

Pope & Talbot Inc. quarterly earnings jumped 63%. The company said the wood products sector had one of the best quarters in its history, with strong demand and prices for lumber and chips offsetting higher log costs.

Louisiana-Pacific Corp. set quarter and first-half sales and earnings records. The building products group turned an operating profit of $59.7 million in the quarter, against $50.1 million in second-quarter 1988. "Prices of many building products have increased dramatically in recent weeks, reflecting declining interest rates and production cutbacks by other producers primarily due to timber supply shortages," said chairman and president Harry A. Merlo.

Georgia-Pacific Corp. building products operating profits for the second quarter were above the same quarter in 1988, $141 million versus $120 million.

"The increased demand for building products this spring resulted in improved prices and, despite lower housing starts, our profits exceeded 1988 levels," observed chairman and CEO T. Marshall Hahn Jr.

An unexpected increase in building materials markets helped bring Willamette Industries' earnings to record levels for the quarter, observed president and CEO William Swindells.

Operating income from Boise Cascade Corp.'s building products segment reached its highest level in two years, rising to $238.5 million from $201.3 million in the two comparable quarters.

A modest decline in demand for wood products was offset by stronger prices. ■

U.S., Canadian forest industry results, second quarter 1989 ($ millions)

Company	Sales	% change 1989/88	Earnings[1]	% change 1989/88
Abitibi-Price Inc.	C830.0	-0.7	C28.8	-47.1
Boise Cascade Corp.	1,091.4	8.4	75.3	4.2
Canadian Pacific For. Prods.	C741.8	-1.6	C72.9	-1.9
Canfor Corp.	C222.2[2]	20.5	C25.7	-13.2
Champion International	1,290.0	2.4	113.9	1.5
Chesapeake Corp.	213.4	15.5	12.0	0.5
Crestbrook Forest Ind. Ltd.	C68.8	8.8	C9.1	18.4
Domtar Inc.	C692.0	7.1	C25.0	4.2
Federal Paper Board	308.8	24.4	51.4	78.2
Fletcher Challenge Canada	C366.0	-6.9	C35.5	-27.4
Georgia-Pacific Corp.	2,640.0	9.2	172.0	45.8
Great Northern Nekoosa	988.4	15.3	90.2	5.7
International Paper Co.	3,000.0	25.0	229.0	21.8
Louisiana-Pacific Corp.	526.1	10.9	48.4[3]	24.1
MacMillan Bloedel Ltd.	C862.0	1.2	C68.3	-27.7
Noranda Forest Inc.	C1,250.0[4]	2.5	C59.0	-16.9
Pope & Talbot Inc.	161.2	32.5	11.2	62.6
Potlatch Corp.	296.1	11.0	25.7	4.9
Stone Container Corp.	1,379.9	60.7	63.6	-18.6
Tembec Inc. (7/27)	C65.8	9.3	C10.6	20.8
Temple-Inland Inc.	476.6	6.3	52.9	-0.4
Union Camp Corp.	711.8	7.8	81.4	9.9
Weldwood of Canada Ltd.	C186.9	-21.3	C16.0	-21.0
Westvaco Corp. (4/30)	561.7	5.3	58.2	28.6
Weyerhaeuser Co.	2,644.0	8.0	154.9	2.8
Willamette Industries	491.5	15.8	47.1	11.2
WTD Industries Inc. (4/30)	94.0	17.8	4.7	100.4

1. Income after taxes, from continuing operations, excluding most significant non-recurring items in both years. 2. Year-ago figure restated to reflect $59.5 million gain on the sale of certain assets. 3. Year-ago figures restated to reflect spinoff of Fibreboard Corp. in June, 1988. 4. Year-ago figures restated to reflect an accounting change.

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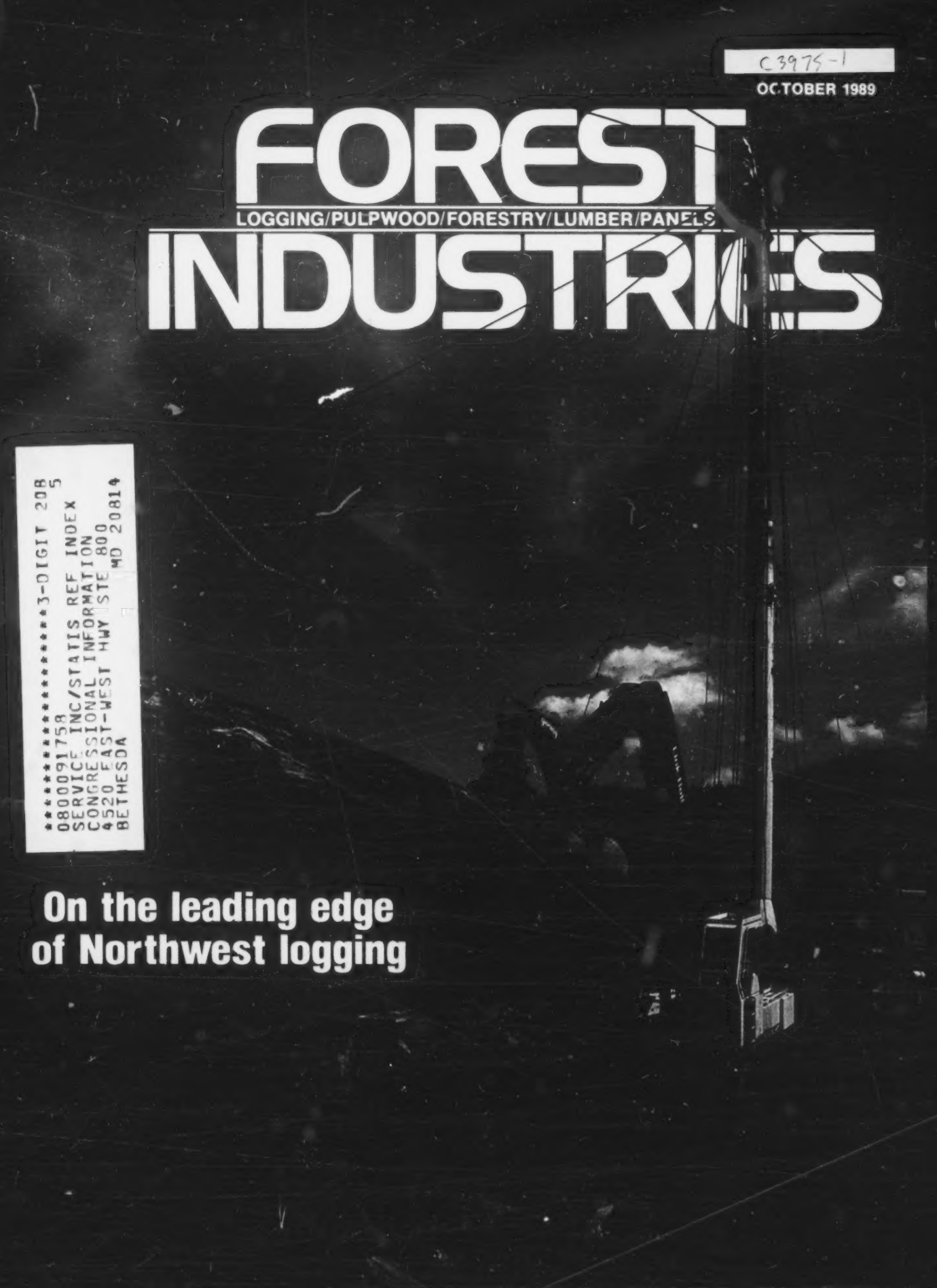

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1989 Volume 116 Number 10

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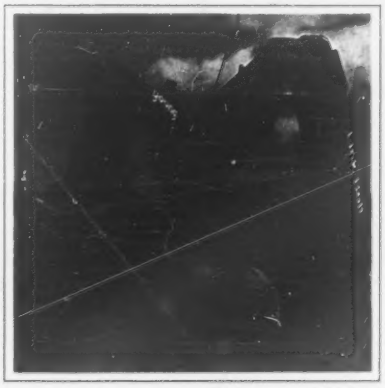

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Despite some forecasts of declining fortunes, the world's forest industry has a decent outlook to 2010, Canadian consultants contend

Sun will not 'set' on forest industry in next 20 years

Vancouver, British Columbia

Forest products is a growth business. It most certainly is not a "sunset industry." But the companies that plan to be around in 20 years will have to adapt to evolving markets and changing timber supplies.

They will have to invest in improved technologies, make high-quality products from lower-quality timber and work efficiently. Even more important, successful companies will have to get out in the marketplace and hustle their wares. If they do all this, they should prosper into the 21st Century.

These are some of the brighter conclusions from a massive, C$325,000 study which Woodbridge, Reed & Associates (WRA) has completed for Forestry Canada. The six-volume, 900-page study, three years in the making, forecasts what life may be like for Canada's forest industry in the period from 1987 to 2010.

If you work for a company with large, efficient "supermills" and enlightened management, your chances of corporate survival should be pretty good. If your paycheck comes from a small sawmill, there seem to be three choices: grow (perhaps by consolidating with other nearby small producers), specialize (get out of commodity lumber production), or shut down.

All this is gross simplification, of course. The Vancouver consulting firm's huge study, "Canada's Forest Industry, the next twenty years: prospects & priorities," details the consultants' projections for both the solid-wood and pulp and paper sides.

Many of those forecasts are fairly bright, although the authors warn that no one should expect fast growth. In 1987, Canada's sales of forest products totaled C$26.7 billion. By 2010, sales are predicted to rise 55% in constant 1986 dollars to C$41.5 billion.

Growth will not come in a steady stream. Lumber producers, especially mills in commodity grades, can expect to endure the same kind of cycles they already know so well. Commodity lumber will continue to be used for residential construction, much of it in the United States. Strong ups and downs will continue.

But the market's dependence on housing will ease. During the next two decades, residential construction's share of the American lumber market will decline from 36% now to under 30%. The industrial sector's consumption share will mirror this, rising from 31% in the mid-80s to 37% in 2010. Canada supplies 40% to 45% of construction-grade lumber consumed in the United States now. In the future, competition is likely from Chile and other low-cost producers for commodity grades.

Woodbridge, Reed discounts U.S. Forest Service forecasts of sharply reduced U.S. lumber consumption. Coupled with stable domestic production, this would signal much lower lumber imports. These predictions, which WRA says are unrealistic, suggest U.S. lumber imports will plummet to 5.5 billion bd ft in 2010. In 1984, the U.S. imported 13.4 billion bd ft.

Worldwide lumber consumption will increase by only one-third during the next 20 years, WRA says, and most of

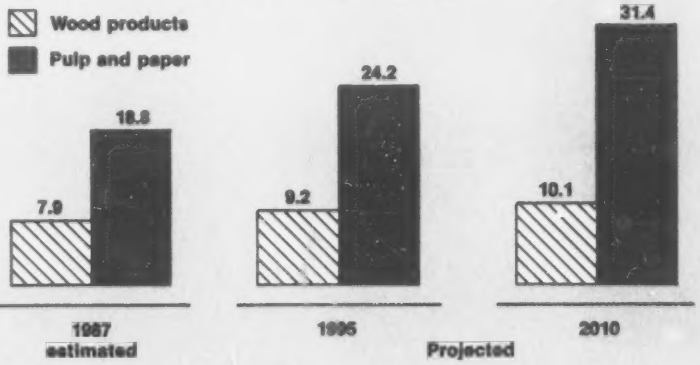
TABLE 1—Canada's growth prospects: summary for wood products sector

	Production volume (million m³)			
	1985	2010	Growth increment	% per year
Lumber	53.9	61.0	7.1	0.5
Panel products:				
Plywood	2.0	2.2	0.2	0.5
Reconstituted boards	2.5	5.6	3.1	3.2

SOURCE: Woodbridge, Reed and Associates.

***Forecasts for growth** in Canada's wood products sector are uneven. OSB and waferboard will see greater growth rates than lumber and plywood.*

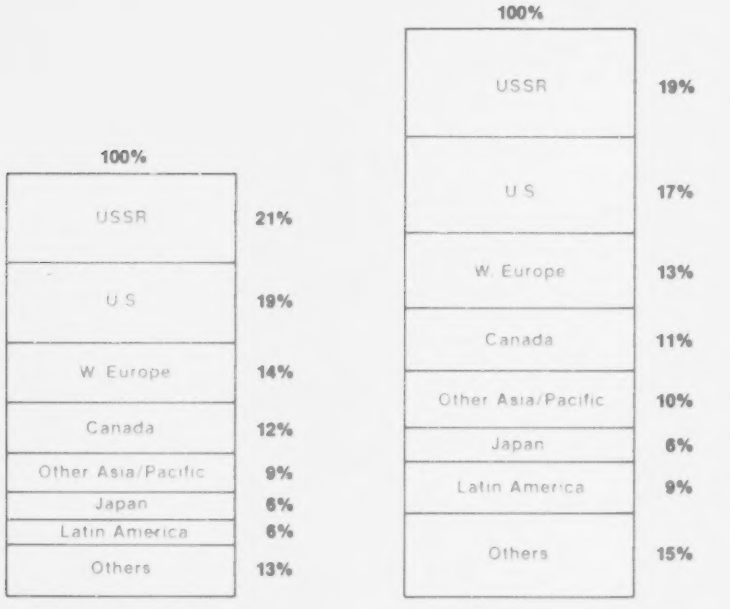
FIG. 1—Canada's forest industry: value of output*



* Billion 1987 C$. SOURCE: Woodbridge, Reed and Associates.

***Pulp and paper** will be the growth side of Canada's forest products industry during the next 20 years. Values of solid-wood products will increase very slowly, along with the demand for these products.*

FIG. 2—Regional % share of world lumber production



SOURCE: Woodbridge, Reed and Associates.

***World leaders** in lumber production, the Soviet Union and the United States, will maintain leadership, but lose shares of production. Latin America, especially Brazil and Chile, should see major production increases.*

that increase will come in demand for tropical woods. Canada's sawmills can expect slow growth between now and 2010, along with shifts to higher-value specialty grades. Mills in the U.S. should plan for similar conditions.

Look for the most growth to come on the paper side. Pulp and paper products accounted for 70% of Canada's forest products value in 1987. By 2010, their share will be up to 76%.

WRA goes to some pains to note that this growth forecast, which it called "fairly conservative," will not happen unless Canadians spend big money on their mills. The consultants suggest that modernizing the industry will cost around C$5.5 billion a year over the next two decades. That comes to C$44 billion.

It is a lot of money, and more than Canada has been investing in its Number One industry. Since 1981, yearly investments in mills have averaged C$4.5 billion. (These figures are all calculated in 1986 dollars.)

Producers must find the money, WRA says: "Ultimately, the magnitude and form of capital investment in the manufacturing industries will be the acid test of whether Canada's forest industry will achieve its full potential over the next 20 years."

But what good are these updated, high-tech mills without wood to process? Are the stories true? Is Canada running out of wood?

Emphatically not, WRA contends. The study complains that those who claim severe fiber shortages are sending the wrong message to Canada's export customers. The country has plenty of timber—an apparent fiber surplus of 50.4 million m^3, WRA figures. That comes to nearly 21.4 billion bd ft, using the conversion rate of 424 bd ft per cubic meter.

Where will all this fiber come from? Most of it from existing forests, since WRA suggests that Canada will have to make better use of its somewhat-neglected hardwood stands. When Canadian provinces figure their annual allowable cuts (AAC), often they don't even count hardwoods. The country's timber-based economy is built around abundant softwood.

Historically, 87% of Canada's harvested timber has been softwood. WRA calculates that 74% of its "apparent fiber surplus" is hardwood. To complicate the matter, often these abundant hardwoods aren't in the same places as the softwoods. Some dislocation is likely if this fiber is to be utilized.

In British Columbia, for example, WRA says that provincial foresters do not even consider hardwood stands in figuring the province's AAC. B.C.'s softwood stands are essentially allocated to industry—at least the ones which are economically usable.

Including hardwoods in annual harvest limits would boost B.C.'s timber supply overall. It would also raise the softwood AAC by some 2 million m^3 a year because softwoods also grow in these "hardwood" stands.

WRA points to similar situations in other provinces. The consultants used hardwood data when estimating that 50-million-cubic-meter apparent surplus.

WRA is quick to add that not all of this timber will be economically operable. But as supplies of handier timber dwindle, prices will rise. Then, just as has already happened in most forest areas, trees that were "too expensive" will be cut.

WRA classes Canadian timber costs as about average on a global scale. During the next 20 years, most Canadian timber will move into the high-cost area, when valued with the rest of the world.

By comparison, timber in the U.S. South is ranked as low-cost now, and it should remain in that category through 2010. Average-cost timber in the U.S. North and West is also expected to maintain its relative average cost on a worldwide scale.

Low-cost softwood fiber is currently available from Chile, Brazil, the southern U.S., Prairie provinces, Inland Empire (U.S.) and Iberia. By 2010, WRA estimates, low-cost softwoods will be mainly confined to Chile, Brazil and the U.S. South. By 2010, most of Canada's timber will be in high-cost areas: Ontario, Quebec, Atlantic provinces and the B.C. Coast. These areas will be in company with Sweden, Finland and Japan.

Chile and Brazil are likely to become significant competitors on world wood markets. In addition to relatively low costs, both countries expect large volumes of plantation timber to mature around the turn of the century.

Chile's supply of industrial softwood timber stood at about 8 million m^3 (3.4 billion bd ft) in 1985. It is predicted to double to 17 million m^3 by 1995, then zoom to 27 million in 2000.

Brazil, which specializes in hardwoods, will see 1985's industrial hardwood timber supply of 35 million m^3 soar to 76 million by 2000 (about 32.2 billion bd ft). This high-quality, low-cost plantation eucalyptus is by far the

most competitive hardwood in the world, WRA notes.

Further boosting these two countries' competitive advantage will be low costs for both labor and energy. Even transportation to major importing markets (Japan, the U.S., Western Europe) will be no more than average.

In addition to major new wood supplies in these and other countries with large plantations (New Zealand, e.g.), fiber supplies in developed countries will increase because of better utilization. WRA's forecasts include some improvements in technology. These will not be dramatic during the next 20 years, but will be sufficient to raise yields of wood products from trees harvested.

Improved technology will also make it possible to process overstocked, diseased and damaged timber, WRA predicts, further boosting fiber supplies.

If Canadian producers are willing (and able) to invest the billions of dollars necessary to compete successfully in global markets, they will find plenty of market opportunities. Taking advantage of these opportunities "will require much more enlightened policies and coordination (among) the various segments of the industry," the study says.

Industry managers bear the burden of making their industry prosper: "The key resource of tomorrow will be effective and innovative management, both in the public as well as the private sector."

WRA adds, "We conclude that all forest industry players have to continue with the current shift from mainly production-oriented to predominately marketing-focused management."

In the past, Canada has been pretty much able to offer its forest products for sale and let the world come calling. The emphasis was on reducing production costs to ensure competitiveness. Those days are over, WRA says.

"The increasingly competitive conditions which will prevail, and the regional specialization which will occur under liberalized trade globally, are very much in favor of Canada's resource position

***Low-cost** countries and regions will see the greatest production increases during the next 20 years. These charts compare 1987 costs of fiber, labor and energy among major forest products producers worldwide. Canada's advantage in lower energy costs helps offset higher relative costs for timber and labor, according to Woodbridge, Reed & Associates. The study, done for Forestry Canada, forecasts worldwide supply and demand trends in the forest products industry through 2010. Canada's outlook is bright.*

FIG. 3—1987 softwood fiber costs (US$/BDMT)

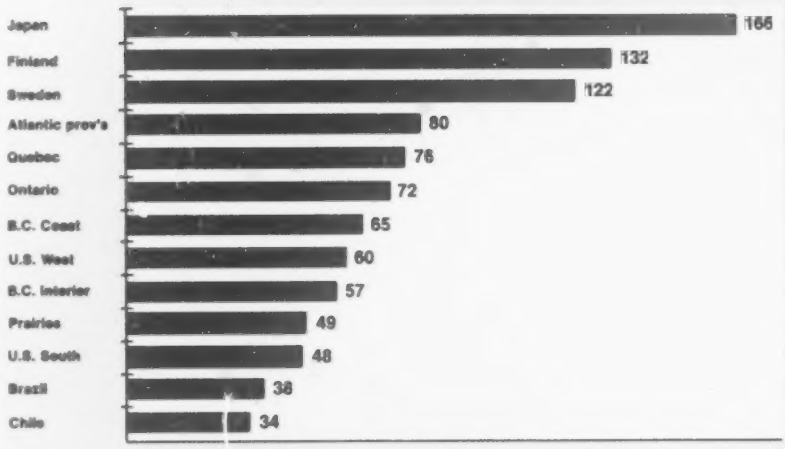


FIG. 4—1987 labor costs (US$/hr worked)

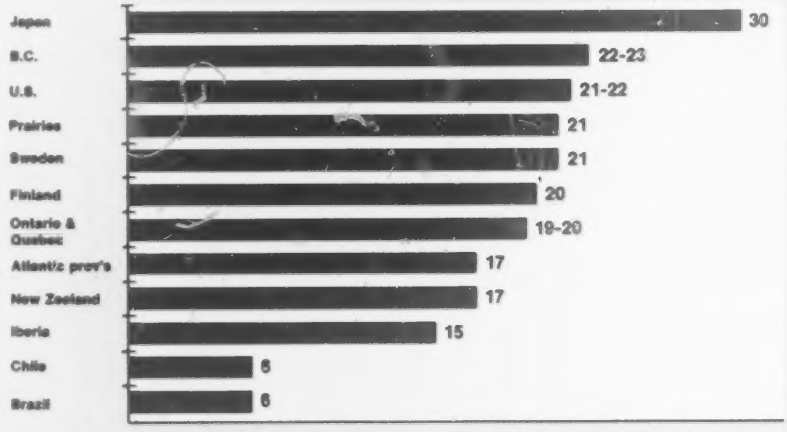
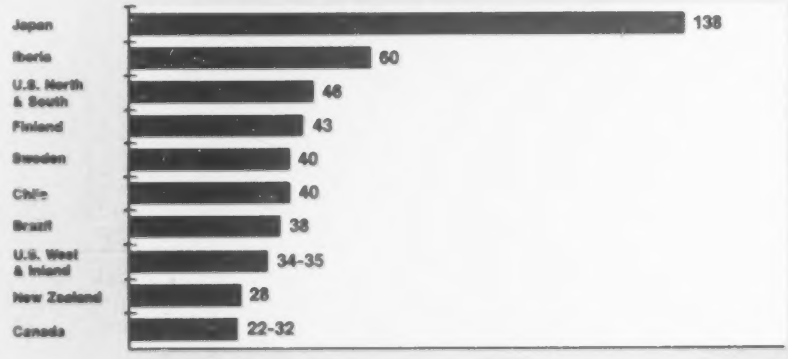


FIG. 5—1987 energy costs (US$/MWH)



SOURCE: Woodbridge, Reed and Associates.

and manufacturing capability," the study predicts. "They will reinforce Canada's very progressive policies on resource development. They will support an aggressive shift toward forward integration and higher value-added.

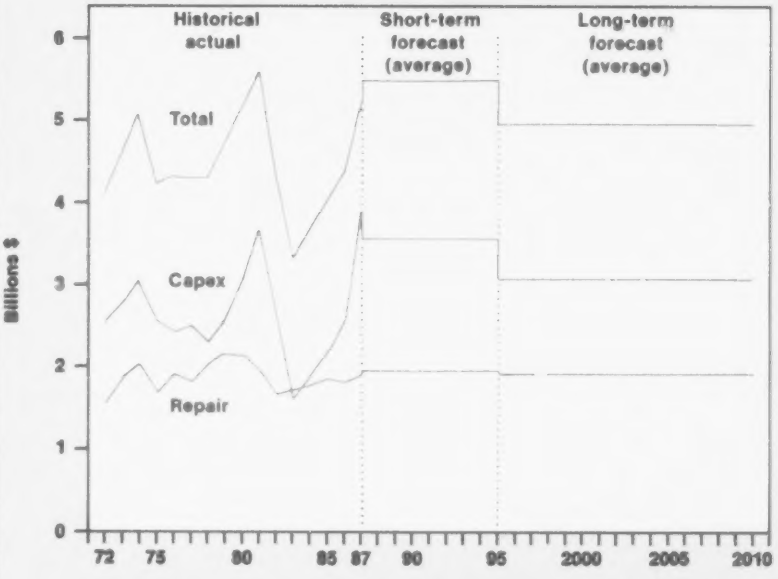
"Most importantly, they will allow the forest products manufacturing industry to capitalize on its competitive strengths and exploit more fully the process and product technologies in which Canada can achieve excellence."

gives it an important advantage. WRA adds that the new free trade agreement between the two countries will probably help Canada's forest industry overall.

"The large and growing U.S. market is Canada's natural export destination," WRA notes. Free trade will remove some barriers to Canadian products, and may also spur American investment in Canadian mills.

Softwood lumber is a mature industry, the study says. Sales to the U.S. will

FIG. 6—Forest sector, historical and forecasted capital spending (1986 constant dollars)



SOURCE: Statistics Canada, Woodbridge, Reed and Associates.

***To keep its position** as a major forest products nation, Canada must invest C$44 billion during the next 20 years to maintain and modernize solid-wood and pulp and paper mills.*

Traditionally, Canada has exported three types of forest products: construction-grade softwood lumber, softwood bleached kraft market pulp and newsprint. WRA warns that markets for commodity grades of lumber and pulp will be static between now and 2010. Prices, in real terms, are likely to do no better than hold their own.

Competition will be tougher. For example, both Brazil and Chile have large plantations of maturing timber and increasing processing capacity. Latin America's low labor costs will offset higher transportation to give Canada a run for its money in the vital U.S. market.

Canada's location adjacent to "one of the largest, growing and net-importing areas in the world," the United States, remain dominant for Canadian mills, but they are not likely to grow much. Wood-based panels will probably not be a major driving force for Canada's forest industry, but there are some growth opportunities over the long term.

Although these low-unit-cost commodity markets are not forecast to grow significantly, they will continue to be the mainstay of Canada's forest economy for many years beyond 2010. The next 20 years will bring changes, but no "revolution" in markets.

Instead, expect an evolution toward more "supermills," integrated operations producing softwood lumber, market pulps and newsprint. On a percentage basis, high growth will come in output of higher-value-added specialty products, but the backbone of the industry must remain commodities.

Growth in sales of solid-wood products will be modest. WRA predicts a 28% increase by 2010, to C$10.1 billion (in 1986 dollars). By contrast, sales in the pulp and paper sector will soar 68% to C$31.4 billion. The consultants expect the two sectors to become increasingly integrated during the period.

Among solid-wood products, lumber production is forecast to edge up an average of 0.5% a year until 2010. Plywood will see the same slow growth rate. But production of reconstituted panels such as OSB and waferboard could grow as much as 3.2% annually, according to Woodbridge, Reed.

Most technological changes in the next 20 years will involve processing: improved scanners, computer-aided optimization, profile sawing and thin-kerf sawing.

None of these changes will yield great breakthroughs, WRA predicts.

What producers must do is design and sell lumber and panel products that develop and fit into small market niches. In other words, the forest industry will have to do what other industries have been doing for years: find a need and fill it. Or, failing that, create a new need. This will be especially so for smaller mills, which will find it harder and harder to compete in commodity markets with "supermills."

Wood-based panel markets will grow slowly during the study period. Industrialized countries have already substituted about as much panel for lumber as will occur. World production is forecast to rise from 110 million m^3 in 1985 to 140 million by 1995 and 175 million in 2010.

Most of the growth will be in output of reconstituted panels. OSB/waferboard panels are cheaper to make than plywood, and can be easily substituted for most uses. The competitive outlook is tough for softwood plywood mills.

In the U.S., WRA predicts that OSB/waferboard will have 40% of the structural panel market by 1995. Their share was less than 15% in 1985. Total U.S. consumption of structural panels is forecast to rise from a little more than 20 million m^3 in 1985 to around 30 million m^3 in 2010.

On the pulp and paper side, production of bleached softwood kraft pulp is forecast to slip about 1% a year during the period. However, hardwood pulps are likely to pick up the slack, growing about 4% annually. Among papers, newsprint and printing and writing papers will maintain their dominance. While newsprint production growth is forecast at 1.5% annually, increases in output of printing and writing papers could well exceed 4% a year. ■

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